CHAPTER 52

LIST OF EFFECTIVE TEMPORARY REVISIONS

FOLLOWING IS A COMPLETE LISTING OF ALL ACTIVE TEMPORARY REVISIONS (TR'S). TR'S NOT LISTED SHOULD BE REMOVED. THE ATA NUMBER, CONFIG CODE AND PAGE NUMBER IDENTIFIES THE PAGE PRECEDING THE TR.

TR NUMBER	ATA NUMBER	CONFIG CODE	PAGE NUMBER	TR DATE

NONE

CHAPTER 52

DOORS

LIST OF EFFECTIVE PAGES

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
List of Effective Pages	1	Dec 15/95	
	2	Dec 15/95	
	3	Dec 15/95	
	4	Dec 15/95	
	5	Dec 15/95	
	6	Dec 15/95	
	7	Dec 15/95	
	8	Dec 15/95	
	9/10	Dec 15/95	
Table of Contents	1	Nov 15/88	
	2	May 15/90	
	3	Mar 15/81	
	4	Nov 15/88	
	5	Nov 15/88	
	6	Nov 15/88	
	7	Nov 15/81	
	8	Nov 15/88	
	9	Jun 15/92	
	10	Nov 15/88	
	11	Nov 15/89	
	12	Mar 15/91	
	13	Dec 15/91	
	14	Nov 15/88	
	15	Nov 15/88	
	16	Nov 15/88	
	17/18	Nov 15/88	
52-conts	1	Jun 15/93	
52-conts	2	Jun 15/95	
52-conts	3	Mar 15/83	
52-conts	4	Mar 15/83	
52-DIAGM	1	Nov 15/85	
52-DIAGM	2	Nov 15/85	
52-DIAGM	3	Feb 15/82	
52-DIAGM	4	Feb 15/82	
52-DIAGM	5	Mar 15/83	
52-DIAGM	6	Mar 15/83	
52-INDEX	1	Jul 15/83	
52-INDEX	2	Mar 15/83	
52-INDEX	3	Mar 15/83	
52-INDEX	4	Mar 15/83	
52-INDEX	5	May 15/85	
52-INDEX	6	Mar 15/83	
52-INDEX	7	Mar 15/83	
52-INDEX	8	Mar 15/83	
52-00-00	1	Aug 15/75	
52-00-00	2	Aug 15/75	
52-00-00	201	Mar 15/83	
52-00-00	202	Mar 15/83	
52-00-00	203/204	Mar 15/83	
52-11-00	1	Mar 15/80	
52-11-00	2	Aug 15/81	
52-11-00	3/4	Mar 15/81	
52-11-01	401	Nov 15/85	
52-11-01	402	Nov 15/85	
52-11-01	403/404	Nov 15/85	
52-11-01	405/406	Aug 1/72	
52-11-01	407/408	Aug 1/72	
52-11-01	501	Nov 15/85	
52-11-01	502	Nov 15/85	
52-11-01	503	Nov 15/85	
52-11-01	504	Nov 15/85	
52-11-01	505	Nov 15/85	
52-11-01	506	Nov 15/85	
52-11-01	507	Nov 15/85	
52-11-01	508	May 15/87	
52-11-01	509	Nov 15/85	
52-11-01	510	Nov 15/85	
52-11-01	511/512	Nov 15/85	
52-11-01	513/514	Dec 15/80	
52-11-01	515/516	Dec 15/80	
52-11-01	517/518	May 15/87	
52-11-01	519/520	Dec 15/80	
52-11-01	521/522	May 15/87	
52-11-01	523/524	Dec 15/80	
52-11-52	401	May 15/89	
52-11-52	402	May 15/89	
52-11-52	403/404	Dec 15/80	
52-11-52	801	Nov 15/83	
52-11-52	802	May 15/89	
52-11-52	803	Nov 15/89	
52-11-52	804	Nov 15/83	
52-11-52	805	May 15/89	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-11-52	806	May 15/89	
52-12-00	1	Dec 15/94	
52-12-00	2	Feb 15/79	
52-12-00	3	Nov 15/83	
52-12-00	4	Jul 15/84	
52-12-00	5	Jul 15/84	
52-12-00	6	Jul 15/84	
52-12-00	7	Dec 15/94	
52-12-00	8	Jun 15/95	
52-12-00	9	Jun 15/95	
52-12-00	10	Jun 15/95	
52-12-00	11	Jun 15/95	
52-12-00	12	Jun 15/95	
52-12-00	101	Mar 15/81	
52-12-00	102	Mar 15/81	
52-12-00	103	Mar 15/81	
52-12-00	104	Mar 15/81	
52-12-00	105	Mar 15/81	
52-12-00	106	Mar 15/81	
52-12-00	107	May 15/82	
52-12-00	108	Mar 15/81	
52-12-00	109	Mar 15/81	
52-12-00	110	Mar 15/81	
52-12-00	111/112	Mar 15/91	
52-12-00	113/114	May 15/82	
52-12-00	115/116	Jun 15/93	
52-12-00	201	Nov 15/85	
52-12-00	202	Nov 15/85	
52-12-00	203	Nov 15/85	
52-12-00	204	Nov 15/85	
52-12-00	205	Nov 15/85	
52-12-00	206	Nov 15/85	
52-12-00	207/208	Nov 15/85	
52-12-00	501	Dec 15/94	
52-12-00	502	Dec 15/94	
52-12-00	503	Nov 15/82	
52-12-00	504	Nov 15/86	
52-12-00	505	Nov 15/86	
52-12-00	506	Nov 15/86	
52-12-00	507	Dec 15/94	
52-12-00	508	Dec 15/94	
52-12-00	509	Dec 15/94	
52-12-00	510	Dec 15/94	
52-12-01	401	May 15/90	
52-12-01	402	May 15/90	
52-12-01	403	May 15/90	
52-12-01	404	May 15/90	
52-12-01	405	May 15/90	
52-12-01	406	May 15/85	
52-12-01	407/408	Nov 15/83	
52-12-03	401	Jun 15/95	
52-12-03	402	Jun 15/95	
52-12-03	403	Jun 15/95	
52-12-03	404	Jun 15/95	
52-12-03	405	Jun 15/95	
52-12-03	406	Jun 15/95	
52-12-03	407	Jun 15/95	
52-12-03	408	Jun 15/95	
52-12-03	409	Jun 15/95	
52-12-03	410	Jun 15/95	
52-12-03	411	Jun 15/95	
52-12-03	412	Jun 15/95	
52-12-03	413	Jun 15/95	
52-12-03	414	Jun 15/95	
52-12-04	401	Nov 15/83	
52-12-04	402	Nov 15/83	
52-12-04	403	Nov 15/83	
52-12-04	404	Nov 15/83	
52-12-04	405/406	Nov 15/83	
52-12-09	401	Jul 15/83	
52-12-09	402	Dec 15/80	
52-12-09	403	Dec 15/80	
52-12-09	404	Dec 15/80	
52-12-09	405/406	Dec 15/80	
52-12-10	401	May 15/90	
52-12-10	402	Feb 15/79	
52-12-10	403	May 15/90	
52-12-10	404	Feb 15/79	
52-12-11	401	May 15/90	
52-12-11	402	Nov 15/85	
52-12-11	403	Nov 15/85	
52-12-11	404	May 15/90	
52-12-11	405/406	Mar 1/72	
52-12-11	407/408	May 15/87	
52-12-11	409/410	Mar 15/83	
52-12-12	401	Feb 15/78	
52-12-12	402	Feb 15/78	
52-12-12	403/404	Mar 15/80	
52-12-13	401	Mar 15/80	
52-12-13	402	Nov 15/75	
52-12-13	403/404	Mar 15/80	
52-12-18	401	Mar 15/83	
52-12-18	402	Sep 15/80	
52-12-18	403/404	Jun 15/80	
52-12-19	401	Mar 15/83	
52-12-19	402	Mar 15/83	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-12-19	403/404	Jun 15/80	
52-12-20	401	Mar 15/83	
52-12-20	402	Mar 15/83	
52-12-20	403/404	Dec 15/80	
52-12-22	401	Mar 15/83	
52-12-22	402	Aug 15/82	
52-12-22	403	Aug 15/82	
52-12-22	404	Dec 15/80	
52-12-22	405/406	Dec 15/80	
52-12-24	401	Jul 15/83	
52-12-24	402	Jul 15/83	
52-12-24	403/404	Jul 15/83	
52-12-24	501	Jul 15/84	
52-12-24	502	Jul 15/84	
52-12-24	503	Jul 15/84	
52-12-24	504	Jul 15/84	
52-12-24	505	Jul 15/84	
52-12-24	506	Jul 15/84	
52-12-24	507	Jul 15/84	
52-12-24	508	Jul 15/84	
52-12-24	509	Jul 15/84	
52-12-24	510	Jul 15/84	
52-12-24	511/512	Jul 15/84	
52-12-25	201	Mar 15/83	
52-12-25	202	Nov 15/81	
52-12-25	203/204	Nov 15/81	
52-12-25	401	Mar 15/83	
52-12-25	402	Nov 15/81	
52-12-25	403	Nov 15/81	
52-12-25	404	Nov 15/81	
52-12-26	501	May 15/85	
52-12-26	502	May 15/85	
52-12-26	503	May 15/85	
52-12-26	504	May 15/85	
52-12-26	505/506	May 15/87	
52-12-26	601	May 15/85	
52-12-26	602	May 15/85	
52-12-26	603/604	Aug 15/82	
52-12-27	401	Dec 15/80	
52-12-27	402	Dec 15/79	
52-12-27	403/404	Dec 15/80	
52-12-27	405/406	Dec 15/80	
52-12-30	401	Aug 15/81	
52-12-30	402	Mar 15/83	
52-12-30	403	Mar 15/83	
52-12-30	404	Sep 15/79	
52-13-00	1	Mar 15/81	
52-13-00	2	Mar 15/81	
52-13-01	401	Nov 15/88	
52-13-01	402	Nov 15/88	
52-13-01	403/404	Feb 15/79	
52-20-00	1/2	Aug 15/74	
52-21-00	1	Aug 15/75	
52-21-00	2	Dec 1/71	
52-21-01	501	Nov 15/85	
52-21-01	502	Nov 15/85	
52-21-01	503	Nov 15/85	
52-21-01	504	Nov 15/85	
52-21-01	505	Nov 15/85	
52-21-01	506	May 15/87	
52-21-01	507/508	May 15/86	
52-21-01	509/510	May 1/72	
52-21-01	511/512	May 15/87	
52-21-01	513	Oct 1/72	
52-21-01	514	Nov 15/85	
52-21-01	515/516	Nov 15/85	
52-21-01	517/518	Aug 15/75	
52-21-52	401	Dec 15/80	
52-21-52	402	Nov 15/75	
52-21-52	403/404	Nov 15/75	
52-22-00	1	Aug 15/75	
52-22-00	2	Jan 15/72	
52-22-00	3	May 15/77	
52-22-00	4	May 15/77	
52-22-00	5/6	May 15/77	
52-22-00	501	Nov 15/86	
52-22-00	502	Nov 15/86	
52-22-00	503	Nov 15/86	
52-22-00	504	Nov 15/86	
52-22-00	505	May 15/90	
52-22-00	506	Nov 15/86	
52-22-01	401	Dec 15/80	
52-22-01	402	Aug 15/82	
52-22-01	403	Mar 15/83	
R 52-22-01	404	Dec 15/95	
R 52-22-01	405	Dec 15/95	
R 52-22-01	406	Dec 15/95	
52-22-02	401	Dec 15/80	
52-22-02	402	Nov 15/75	
52-22-03	401	Dec 15/80	
52-22-03	402	Aug 15/75	
52-22-03	403	Dec 15/80	
52-22-03	404	Dec 15/80	
52-22-05	401	Aug 15/81	
52-22-05	402	Aug 15/81	
52-22-05	403/404	Aug 15/74	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-22-06	401	Dec 15/80	
52-22-06	402	Mar 15/80	
52-22-07	401	Mar 15/83	
52-22-07	402	Mar 15/83	
52-22-07	403	Mar 15/83	
52-22-07	404	Mar 15/83	
52-22-07	405/406	Sep 15/73	
52-22-07	407/408	Apr 1/72	
52-22-07	409/410	Mar 15/83	
52-22-08	401	Dec 15/80	
52-22-08	402	Aug 15/74	
52-22-08	403/404	Mar 1/72	
52-22-10	501	Mar 15/81	
52-22-10	502	Dec 15/80	
52-22-10	503/504	Dec 15/80	
52-22-10	505/506	Mar 15/81	
52-22-10	601	Dec 15/80	
52-22-10	602	Dec 15/80	
52-22-10	603/604	Dec 15/80	
52-22-11	401	Dec 15/80	
52-22-11	402	Jan 15/73	
52-22-11	403/404	Mar 15/81	
52-22-11	501	Jul 15/84	
52-22-11	502	Jul 15/84	
52-22-11	503	Nov 15/87	
52-22-11	504	Jul 15/84	
52-22-11	505	Jul 15/84	
52-22-11	506	Jul 15/84	
52-22-11	507	Jul 15/84	
52-22-11	508	Jul 15/84	
52-22-11	509/510	May 15/86	
52-22-11	511/512	May 15/86	
52-22-12	401	Dec 15/80	
52-22-12	402	May 15/76	
52-22-12	403/404	May 15/76	
52-23-00	1	Jan 15/73	
52-23-00	2	Dec 1/71	
52-23-01	401	Jan 15/73	
52-23-01	402	Feb 15/76	
52-23-01	403/404	Jun 1/72	
52-23-01	501	Nov 15/78	
52-23-01	502	Nov 15/78	
52-23-01	503	Aug 15/81	
52-23-01	504	Aug 15/81	
52-23-01	505/506	Nov 15/78	
52-23-01	507	Nov 15/78	
52-23-01	508	Nov 15/78	
52-23-02	401/402	Mar 15/83	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-23-03	401	Nov 15/88	
52-23-03	402	Feb 15/75	
52-24-01	401	Nov 15/81	
52-24-01	402	May 1/72	
52-24-01	403/404	May 1/72	
52-24-02	401/402	Apr 1/72	
52-30-00	1	Jul 15/84	
52-30-00	2	Dec 15/79	
52-30-00	3/4	Nov 15/82	
52-30-00	5	Nov 15/85	
52-30-00	6	Dec 15/79	
52-30-00	7	Nov 15/84	
52-30-00	8	Nov 15/82	
52-30-00	9	Nov 15/84	
52-30-00	10	Nov 15/82	
52-30-00	11	Nov 15/82	
52-30-00	12	Nov 15/82	
52-30-00	13	Nov 15/82	
52-30-00	14	Nov 15/82	
52-30-00	15	Nov 15/82	
52-30-00	16	Nov 15/82	
52-30-00	17	Nov 15/82	
52-30-00	18	Nov 15/82	
52-30-00	19	Nov 15/82	
52-30-00	20	Nov 15/82	
52-30-00	21	Nov 15/82	
52-30-00	22	Nov 15/82	
52-30-00	23	Nov 15/82	
52-30-00	24	Nov 15/82	
52-30-00	25	Nov 15/85	
52-30-00	26	Nov 15/85	
52-30-00	27	Nov 15/85	
52-30-00	28	Nov 15/85	
52-30-00	29	Nov 15/82	
52-30-00	30	Nov 15/82	
52-30-00	31	Nov 15/82	
52-30-00	32	Nov 15/82	
52-30-00	33	Nov 15/85	
52-30-00	34	Nov 15/85	
52-30-00	201	May 15/82	
52-30-00	202	Nov 15/82	
52-30-00	203	Nov 15/82	
52-30-00	204	Nov 15/82	
52-30-00	205	Nov 15/82	
52-30-00	206	Nov 15/82	
52-30-00	207/208	Jun 15/92	
52-30-00	209/210	Jun 15/92	
52-30-00	211	Dec 15/80	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-30-00	212	Nov 15/82	
52-30-00	213	Jun 15/92	
52-30-00	214	Jun 15/92	
52-30-00	215/216	Nov 15/86	
52-30-01	601	Nov 15/84	
52-30-01	602	Dec 15/80	
52-30-01	603	Mar 15/81	
52-30-01	604	Dec 15/80	
52-30-01	605	Dec 15/80	
52-30-01	606	Dec 15/80	
52-30-04	501	Mar 15/81	
52-30-04	502	Feb 15/79	
52-30-04	503	Mar 15/81	
52-30-04	504	Mar 15/81	
52-30-04	505	Mar 15/81	
52-30-04	506	Mar 15/81	
52-30-04	507/508	Mar 15/81	
52-30-07	501	Nov 15/89	
52-30-07	502	May 15/88	
52-30-07	503	Nov 15/88	
52-30-07	504	May 15/88	
52-30-07	505	May 15/88	
52-30-07	506	May 15/88	
52-30-07	507	May 15/88	
52-30-07	508	May 15/88	
52-30-07	509	May 15/88	
52-30-07	510	May 15/88	
52-30-07	511	May 15/88	
52-30-07	512	May 15/88	
52-30-13	501	Nov 15/81	
52-30-13	502	Nov 15/81	
52-30-13	503	Nov 15/83	
52-30-13	504	Nov 15/81	
52-30-13	505	Dec 15/80	
52-30-13	506	Nov 15/81	
52-30-13	507	Nov 15/81	
52-30-13	508	Nov 15/81	
52-30-13	509	Nov 15/81	
52-30-13	510	Dec 15/80	
52-30-13	511	Dec 15/80	
52-30-13	512	Dec 15/80	
52-30-13	513	May 15/86	
52-30-13	514	Dec 15/80	
52-30-13	515	Dec 15/80	
52-30-13	516	Dec 15/80	
52-30-13	517	Dec 15/80	
52-30-13	518	Dec 15/80	
52-30-13	519	Dec 15/80	
52-30-13	520	Dec 15/80	
52-30-19	501	Nov 15/83	
52-30-19	502	Dec 15/93	
52-30-19	503	Dec 15/93	
52-30-19	504	Dec 15/93	
52-30-19	505	Dec 15/93	
52-30-19	506	Dec 15/93	
52-30-19	507	Dec 15/93	
52-30-19	508	Dec 15/93	
52-30-19	509	Dec 15/93	
52-30-19	510	Dec 15/93	
52-30-19	511	Dec 15/93	
52-30-19	512	Dec 15/93	
52-30-19	513	Dec 15/93	
52-30-19	514	Dec 15/93	
52-30-19	515	Dec 15/93	
52-30-19	516	Dec 15/93	
52-30-19	517	Dec 15/93	
52-30-19	518	Dec 15/93	
52-30-19	519	Dec 15/93	
52-30-19	520	Dec 15/93	
52-30-22	501	Nov 15/81	
52-30-22	502	Nov 15/83	
52-30-22	503	Mar 15/91	
52-30-22	504	Mar 15/91	
52-30-22	505	Mar 15/91	
52-30-22	506	Mar 15/91	
52-30-22	507/508	Dec 15/93	
52-30-25	501	Dec 15/80	
52-30-25	502	Dec 15/80	
52-30-25	503	Feb 15/79	
52-30-25	504	Mar 15/81	
52-30-28	501	Feb 15/79	
52-30-28	502	Nov 15/87	
52-30-28	503	Aug 15/81	
52-30-28	504	Aug 15/81	
52-30-28	505/506	Aug 15/81	
52-30-31	601	Feb 15/79	
52-30-31	602	Mar 15/81	
52-30-31	603	Mar 15/81	
52-30-31	604	Mar 15/81	
52-30-31	605	Mar 15/81	
52-30-31	606	Mar 15/81	
52-30-31	607/608	Mar 15/81	
52-31-01	401	Nov 15/84	
52-31-01	402	Mar 15/81	
52-31-01	403	Dec 15/80	
52-31-01	404	Dec 15/80	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-31-01	405/406	Jun 15/92	
52-31-01	407/408	Jun 15/92	
52-31-01	409/410	Jun 15/92	
52-31-01	411/412	Jun 15/92	
52-31-01	413/414	Jun 15/92	
52-31-01	415	Jun 15/92	
52-31-01	416	Jun 15/92	
52-31-01	417	Jun 15/92	
52-31-01	418	Jun 15/92	
52-31-01	419	Jun 15/92	
52-31-01	420	Jun 15/92	
52-31-01	421	Jun 15/92	
52-31-01	422	Jun 15/92	
52-31-03	401	Nov 15/83	
52-31-03	402	Jun 15/92	
52-31-03	403	Nov 15/85	
52-31-03	404	Jun 15/92	
52-31-03	405	Jun 15/93	
52-31-03	406	Jun 15/92	
52-31-03	407/408	Jun 15/92	
52-31-05	401	Nov 15/83	
52-31-05	402	May 15/88	
52-31-05	403	May 15/88	
52-31-05	404	May 15/88	
52-31-05	405	May 15/88	
52-31-05	406	May 15/82	
52-31-05	407	Aug 15/82	
52-31-05	408	May 15/88	
52-31-05	801	May 15/86	
52-31-05	802	Mar 15/84	
52-31-05	803	May 15/86	
52-31-05	804	May 15/86	
52-31-05	805	Mar 15/84	
52-31-05	806	Mar 15/84	
52-31-05	807	Mar 15/84	
52-31-05	808	Mar 15/84	
52-31-05	809/810	Mar 15/84	
52-31-05	811/812	May 15/86	
52-31-05	813/814	Mar 15/84	
52-31-07	401	Dec 15/80	
52-31-07	402	Nov 15/82	
52-31-07	403/404	Dec 15/80	
52-31-08	401	Jun 15/92	
52-31-08	402	Aug 15/81	
52-31-08	403	Jun 15/94	
52-31-08	404	Jun 15/92	
52-31-08	405	Jun 15/92	
52-31-08	406	Aug 15/82	
52-31-08	407/408	Mar 15/80	
52-31-10	401	Jun 15/92	
52-31-10	402	Jun 15/92	
52-31-10	403	Jun 15/92	
52-31-10	404	Jun 15/92	
52-31-10	405	Jun 15/92	
52-31-10	406	Jun 15/92	
52-31-10	407	Jun 15/92	
52-31-10	408	Jun 15/92	
52-31-10	409/410	Jun 15/92	
52-31-16	401	Nov 15/84	
52-31-16	402	Nov 15/84	
52-31-16	403	Nov 15/84	
52-31-16	404	May 15/85	
52-31-16	405	May 15/86	
52-31-16	406	May 15/86	
52-31-16	407	Nov 15/84	
52-31-16	408	Nov 15/84	
52-31-16	409	Nov 15/84	
52-31-16	410	Nov 15/84	
52-31-16	411	Nov 15/84	
52-31-16	412	Nov 15/84	
52-31-16	413/414	Nov 15/84	
52-31-16	501	Aug 15/82	
52-31-16	502	Nov 15/83	
52-31-16	503	May 15/85	
52-31-16	504	Nov 15/84	
52-31-16	505	Aug 15/82	
52-31-16	506	Aug 15/82	
52-31-16	507/508	May 15/89	
52-31-18	401	Nov 15/87	
52-31-18	402	Nov 15/87	
52-31-18	403	Nov 15/87	
52-31-18	404	Nov 15/87	
52-31-18	405/406	Nov 15/87	
52-31-19	401	Jun 15/92	
52-31-19	402	Jun 15/92	
52-31-19	403	Jun 15/92	
52-31-19	404	Jun 15/92	
52-31-19	405	Jun 15/92	
52-31-19	406	Jun 15/92	
52-31-19	407	Jun 15/92	
52-31-19	408	Jun 15/92	
52-34-00	1	Nov 15/82	
52-34-00	2	Dec 15/93	
52-34-00	3	Dec 15/93	
52-34-00	4	Nov 15/89	
52-34-00	5	Nov 15/89	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-34-00	6	Nov 15/89	
52-34-00	101	Nov 15/86	
52-34-00	102	Nov 15/86	
52-34-00	103	Nov 15/82	
52-34-00	104	Nov 15/82	
52-34-00	105	Nov 15/82	
52-34-00	106	Nov 15/82	
52-34-00	107	Nov 15/82	
52-34-00	108	Nov 15/82	
52-34-00	109	Nov 15/82	
52-34-00	110	Nov 15/82	
52-34-00	111	Nov 15/82	
52-34-00	112	Nov 15/82	
52-34-00	113	Nov 15/82	
52-34-00	114	Nov 15/82	
52-34-00	115	Nov 15/86	
52-34-00	116	Nov 15/82	
52-34-00	117	Nov 15/82	
52-34-00	118	Dec 15/92	
52-34-00	119	Nov 15/82	
52-34-00	120	Nov 15/82	
52-34-00	121/122	Dec 15/94	
52-34-00	123/124	Jun 15/95	
52-34-00	125/126	Dec 15/94	
52-34-00	201	Mar 15/84	
52-34-00	202	May 15/87	
52-34-00	203	May 15/87	
52-34-00	204	May 15/87	
52-34-00	205	May 15/87	
52-34-00	206	May 15/87	
52-34-00	207	May 15/87	
52-34-00	208	May 15/87	
52-34-00	209	Mar 15/91	
52-34-00	210	May 15/87	
52-34-00	211	May 15/87	
52-34-00	212	May 15/87	
52-34-00	213	May 15/87	
52-34-00	214	May 15/87	
52-34-00	215	May 15/87	
52-34-00	216	May 15/87	
52-34-00	217	May 15/87	
52-34-00	218	May 15/87	
52-34-00	219	May 15/87	
52-34-00	220	Mar 15/91	
52-34-00	221	Mar 15/84	
52-34-00	222	Mar 15/84	
52-34-00	223	Mar 15/84	
52-34-00	224	Mar 15/84	
52-34-00	225	Mar 15/84	
52-34-00	226	Mar 15/84	
52-34-00	227	May 15/85	
52-34-00	228	Mar 15/84	
52-34-00	229	Mar 15/84	
52-34-00	230	Mar 15/84	
52-34-00	231	Mar 15/84	
52-34-00	232	Mar 15/84	
52-34-00	233	Mar 15/84	
52-34-00	234	Mar 15/84	
52-34-00	235/236	Mar 15/84	
52-34-00	237	Mar 15/91	
52-34-00	238	Mar 15/91	
52-34-00	239	Mar 15/91	
52-34-00	240	Mar 15/91	
52-34-00	241	Mar 15/91	
52-34-00	242	Mar 15/91	
52-34-00	243	Mar 15/91	
52-34-00	244	Mar 15/91	
52-34-00	245/246	Mar 15/91	
52-34-00	501	Dec 15/79	
52-34-00	502	Nov 15/89	
52-34-00	503	Nov 15/88	
52-34-00	504	Nov 15/88	
52-34-00	505	Mar 15/91	
52-34-00	506	Mar 15/91	
52-34-00	507	Mar 15/91	
52-34-00	508	Mar 15/91	
52-34-00	509	Mar 15/91	
52-34-00	510	Mar 15/91	
52-34-00	511	Mar 15/91	
52-34-00	512	Mar 15/91	
52-34-00	513	Mar 15/91	
52-34-00	514	Mar 15/91	
52-34-00	515	Mar 15/91	
52-34-00	516	Mar 15/91	
52-34-00	517	Mar 15/91	
52-34-00	518	Mar 15/91	
52-34-00	519	Mar 15/91	
52-34-00	520	Mar 15/91	
52-34-00	521	Mar 15/91	
52-34-00	522	Mar 15/91	
52-34-00	523	Mar 15/91	
52-34-00	524	Mar 15/91	
52-34-01	401	Nov 15/89	
52-34-01	402	Nov 15/89	
52-34-01	403	Nov 15/89	
52-34-01	404	Nov 15/89	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-34-01	405	Nov 15/89	
52-34-01	406	Nov 15/89	
52-34-01	407	Nov 15/89	
52-34-01	408	Nov 15/89	
52-34-01	409/410	Nov 15/89	
52-34-02	401	Mar 15/81	
52-34-02	402	Mar 15/81	
52-34-02	403	Dec 15/80	
52-34-02	404	Dec 15/80	
52-34-02	405/406	Dec 15/80	
52-34-03	401/402	Mar 15/81	
52-34-05	401	Nov 15/84	
52-34-05	402	Nov 15/84	
52-34-05	403	Nov 15/83	
52-34-05	404	Nov 15/83	
52-34-05	405	Aug 15/81	
52-34-05	406	Aug 15/82	
52-34-05	407	Aug 15/82	
52-34-05	408	May 15/87	
52-34-09	401	Nov 15/84	
52-34-09	402	Nov 15/83	
52-34-09	403/404	Dec 15/80	
52-34-09	405/406	Nov 15/84	
52-34-09	407/408	Dec 15/80	
52-34-52	201	Nov 15/84	
52-34-52	202	Nov 15/86	
52-34-53	601/602	Aug 15/76	
52-34-54	601	May 15/87	
52-34-54	602	May 15/87	
52-40-00	1/2	Aug 15/74	
52-41-00	1	Dec 1/71	
52-41-00	2	Dec 1/71	
52-41-00	3/4	Mar 15/73	
52-41-01	401	Jun 15/80	
52-41-01	402	Aug 15/81	
52-41-01	403	Aug 15/81	
52-41-01	404	Aug 15/81	
52-41-01	405	Aug 15/81	
52-41-01	406	Aug 15/81	
52-41-01	501	Nov 15/82	
52-41-01	502	Nov 15/82	
52-41-01	503	Nov 15/82	
52-41-01	504	Nov 15/82	
52-41-01	505	Nov 15/82	
52-41-01	506	Nov 15/82	
52-41-01	507/508	Aug 15/75	
52-41-01	509/510	Aug 15/75	
52-41-01	511	Aug 15/75	
52-41-01	512	Aug 15/75	
52-41-01	513	Mar 15/83	
52-41-01	514	Nov 15/82	
52-41-01	601	Mar 15/91	
52-41-01	602	May 15/88	
52-41-03	401	Sep 15/80	
52-41-03	402	May 1/72	
52-41-05	401	Mar 15/91	
52-41-05	402	Mar 15/91	
52-41-10	501	Mar 15/80	
52-41-10	502	Mar 15/80	
52-41-10	503/504	Mar 15/80	
52-42-01	201	Nov 15/83	
52-42-01	202	Nov 15/83	
52-42-01	203/204	Nov 15/87	
52-42-01	401	Mar 15/83	
52-42-01	402	Aug 15/81	
52-42-01	403/404	Nov 15/87	
52-42-01	405/406	May 15/76	
52-42-04	401	Mar 15/83	
52-42-04	402	Aug 15/74	
52-42-04	403/404	Aug 15/74	
52-42-04	405	Aug 15/74	
52-42-04	406	Aug 15/74	
52-42-04	501	Aug 15/75	
52-42-04	502	Aug 15/75	
52-42-04	503	Dec 15/91	
52-42-04	504	Dec 15/91	
52-42-04	505	Dec 15/91	
52-42-04	506	Dec 15/91	
52-42-04	507	Dec 15/91	
52-42-04	508	Dec 15/91	
52-42-04	509/510	Dec 15/91	
52-42-04	511/512	Dec 15/91	
52-42-04	513/514	Dec 15/91	
52-42-04	515/516	Nov 15/88	
52-43-00	1	May 15/76	
52-43-00	2	Mar 15/81	
52-43-00	3	Mar 15/81	
52-43-00	4	Mar 15/81	
52-43-00	5/6	Jun 15/79	
52-43-01	201	Nov 15/83	
52-43-01	202	Nov 15/83	
52-43-01	401	Jun 15/93	
52-43-01	402	Dec 15/91	
52-43-01	403	Dec 15/91	
52-43-01	404	Dec 15/91	
52-43-02	401/402	May 15/89	

CHAPTER/ SECTION	PAGE	DATE	CONFIG CODE
52-43-03	401/402	Dec 15/92	
52-43-03	501	Mar 15/81	
52-43-03	502	Sep 15/73	
52-43-03	503/504	Sep 15/73	
52-43-04	401/402	May 15/89	
52-43-05	401	Aug 15/76	
52-43-05	402	Aug 15/76	
52-43-06	401	Aug 15/76	
52-43-06	402	Aug 15/76	
52-43-06	403	Aug 15/76	
52-43-06	404	Aug 15/76	
52-43-07	401	May 15/76	
52-43-07	402	May 15/77	
52-43-07	403/404	May 15/76	
52-44-00	1/2	May 15/73	
52-44-01	401	Feb 15/75	
52-44-01	402	Feb 15/75	
52-44-01	403/404	Feb 15/75	
52-45-00	1/2	Mar 1/72	
52-45-01	401	May 1/72	
52-45-01	402	May 1/72	
52-45-02	401	Nov 15/76	
52-45-02	402	May 15/82	
52-45-02	403	May 15/82	
52-45-02	404	May 15/82	
52-45-02	405	May 15/82	
52-45-02	406	May 15/82	
52-45-02	407/408	May 15/82	
52-50-00	1/2	Dec 1/71	
52-51-00	1	Mar 15/81	
52-51-00	2	Jan 15/73	
52-51-00	3/4	Dec 1/71	
52-51-00	101	Mar 15/83	
52-51-00	102	Mar 15/83	
52-51-00	103	Mar 15/83	
52-51-00	104	Mar 15/83	
52-51-01	401/402	Mar 1/72	
52-51-02	401/402	Mar 1/72	
52-51-03	401/402	Mar 1/72	
52-51-04	401	Aug 15/76	
52-51-04	402	Aug 15/76	
52-52-00	1/2	Mar 1/72	
52-52-01	401/402	Mar 1/72	
52-52-02	401/402	Mar 1/72	
52-53-01	401	Apr 1/72	
52-53-01	402	Apr 1/72	
52-71-00	1/2	Dec 15/79	
52-71-00	101	Mar 15/81	
52-71-00	102	Mar 15/81	
52-71-00	103	Mar 15/81	
52-71-00	104	Mar 15/81	
52-71-00	105	Mar 15/81	
52-71-00	106	Mar 15/81	
52-71-00	107	Mar 15/81	
52-71-00	108	Mar 15/81	
52-71-00	109	Mar 15/81	
52-71-00	110	Mar 15/81	
52-71-00	111/112	Mar 15/83	
52-71-00	113/114	Mar 15/81	
52-71-00	115/116	Mar 15/81	
52-71-00	201/202	Dec 15/93	
52-71-00	501	Jun 15/92	
52-71-00	502	Aug 15/81	
52-71-00	503	Aug 15/81	
52-71-00	504	Dec 15/80	
52-71-00	505	Jun 15/92	
52-71-00	506	Jun 15/92	
52-71-03	401	Mar 15/83	
52-71-03	402	Nov 15/83	
52-81-00	1	Dec 1/71	
52-81-00	2	Dec 1/71	
52-81-00	3/4	Dec 1/71	
52-81-00	501	Nov 15/83	
52-81-00	502	Nov 15/83	
52-82-00	1	Dec 1/71	
52-82-00	2	Dec 1/71	

CHAPTER 52

DOORS

TABLE OF CONTENTS

	Subject	Chapter Section Subject	Page	Effectivity
	INDEX	52-INDEX		
	FIRM Fault Code Cross Reference		1	ALL
	DOORS	52-00-00		
R	Description and Operation		1	ALL
	PASSENGER/CREW	52-10-00		
	PASSENGER DOORS	52-11-00		
R	Description and Operation		1	ALL
	DOOR - PASSENGER	52-11-01		
	Removal/Installation		401	ALL
	Adjustment/Test		501	ALL
	DOOR SEAL - PASSENGER	52-11-52		
	Removal/Installation		401	ALL
	Approved Repairs		801	ALL
	DOOR ACTUATION SYSTEM - PASSENGER	52-12-00		
R	Description and Operation		1	ALL
	Fault Isolation		101	ALL
	Maintenance Practices		201	ALL
	Adjustment/Test		501	ALL
	ACTUATOR - PASSENGER DOOR	52-12-01		
	Removal/Installation		401	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	PASSENGER/CREW (CONT)	52-10-00		
CR	PASSENGER DOOR COUNTERBALANCE	52-12-03		
CR	Removal/Installation		401	ALL
CR	PASSENGER DOOR CROSS-DRIVE GEARBOX	52-12-04		
CR	Removal/Installation		401	ALL
	FLEXIBLE SHAFT - CROSS-DRIVE	52-12-09		
	Removal/Installation		401	ALL
R	PASSENGER DOOR TRACK PINION GEAR	52-12-10		
	Removal/Installation		401	ALL
R	PASSENGER DOOR TRACK	52-12-11		
	Removal/Installation		401	ALL
	ANGLE DRIVE - MANUAL THREE-WAY	52-12-12		
	Removal/Installation		401	ALL
	ANGLE DRIVE - MANUAL TWO-WAY	52-12-13		
	Removal/Installation		401	ALL
	SWITCH - LIMIT, PASSENGER DOOR OPEN	52-12-18		
	Removal/Installation		401	ALL
	SWITCH - UNIT, PASSENGER DOOR CLOSED	52-12-19		
	Removal/Installation		401	ALL
	SWITCHES - ENGAGE/DETACH, EVACUATION SLIDE	52-12-20		
	Removal/Installation		401	ALL
	LIMIT SWITCH - PASSENGER DOOR UPLOCK/DOWNLOCK RETRACT	52-12-22		
	Removal/Installation		401	ALL
	HANDLE - PASSENGER DOOR	52-12-24		
	Removal/Installation		401	ALL
	Adjustment/Test		501	ALL
	SOLENOID - PASSENGER DOOR LOCK MECHANISM	52-12-25		
	Maintenance Practices		201	ALL
	Removal/Installation		401	ALL
	LOCK MECHANISM - PASSENGER DOOR	52-12-26		
	Adjustment/Test		501	ALL
	Inspection and Check		601	ALL

Subject	Chapter Section Subject	Page	Effectivity
PASSENGER/CREW (CONT)	52-10-00		
CABLE - PASSENGER DOOR LOCK MECHANISM CONTROL	52-12-27		
Removal/Installation		401	ALL
RELAY - PASSENGER DOOR ACTUATOR MOTOR CONTROL	52-12-30		
Removal/Installation		401	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	PASSENGER/CREW (CONT)	52-10-00		
	PASSENGER DOOR LINING	52-13-00		
R	Description and Operation		1	ALL
	LINING - PASSENGER DOOR	52-13-01		
	Removal/Installation		401	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	EMERGENCY EXIT	52-20-00		
R	Description and Operation		1	ALL
	EMERGENCY EXIT DOORS	52-21-00		
R	Description and Operation		1	ALL
	DOOR - EMERGENCY EXIT	52-21-01		
	Adjustment/Test		501	ALL
	SEAL - DOOR	52-21-52		
	Removal/Installation		401	ALL
	EMERGENCY EXIT DOOR ACTUATION SYSTEM	52-22-00		
R	Description and Operation		1	ALL
	Adjustment/Test		501	ALL
	COUNTERBALANCE	52-22-01		
	Removal/Installation		401	ALL
	LIMITER - SPEED	52-22-02		
	Removal/Installation		401	ALL
	GEARBOX - CROSS-DRIVE	52-22-03		
	Removal/Installation		401	ALL
	FLEXIBLE SHAFT - CROSS-DRIVE	52-22-05		
	Removal/Installation		401	ALL
	PINION GEAR - DOOR TRACK	52-22-06		
	Removal/Installation		401	ALL
	TRACK - DOOR	52-22-07		
	Removal/Installation		401	ALL
	ANGLE DRIVE - MANUAL TWO-WAY	52-22-08		
	Removal/Installation		401	ALL
	UPLOCK/DOWNLOCK MECHANISM	52-22-10		
	Adjustment/Test		501	ALL
	Inspection/Check		601	ALL

Subject	Chapter Section Subject	Page	Effectivity
EMERGENCY EXIT (CONT)	52-20-00		
HANDLE ASSEMBLY - DOOR	52-22-11		
Removal/Installation		401	ALL
Adjustment/Test		501	ALL
CONTROL CABLE - UPLOCK DOWNLOCK MECHANISM	52-22-12		
Removal/Installation		401	ALL
FLIGHT COMPARTMENT EMERGENCY HATCH	52-23-00		
R Description and Operation		1	ALL
HATCH - EMERGENCY, FLIGHT COMPARTMENT	52-23-01		
Removal/Installation		401	ALL
Adjustment/Test		501	ALL
LATCH ASSEMBLY - FLIGHT COMPARTMENT EMERGENCY HATCH	52-23-02		
Removal/Installation		401	ALL
SEAL - PRESSURE, HATCH	52-23-03		
Removal/Installation		401	ALL

	Subject	Chapter Section Subject	Page	Effectivity
R	EMERGENCY EXIT (CONT)	52-20-00		
	EMERGENCY EXIT LINING	52-24-00		
	LINING - DOOR Removal/Installation	52-24-01	401	ALL
	LINING - HATCH, FLIGHT COMPARTMENT Removal/Installation	52-24-02	401	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	CARGO DOORS	52-30-00		
R	Description and Operation		1	ALL
	Maintenance Practices		201	ALL
	Cargo Doors Maintenance Index			
	RIGGING - CARGO DOOR, PREPARATION FOR	52-30-01		
	Inspection/Check		601	ALL
	CLOSING CHECK - CARGO DOOR	52-30-04		
	Adjustment/Test		501	ALL
	LATCHING - CARGO DOOR	52-30-07		
	Adjustment/Test		501	ALL
	PRESSURE STOP BOLT AND HOOKS - CARGO DOOR	52-30-13		
	Adjustment/Test		501	ALL
	SAFETY STOP - CARGO DOOR	52-30-19		
	Adjustment/Test		501	ALL
	PROXIMITY SENSOR - CARGO DOOR	52-30-22		
	Adjustment/Test		501	ALL
	CARGO DOOR FULL OPEN	52-30-25		
	Adjustment/Test		501	ALL
	UNLOCK SWITCH - CARGO DOOR	52-30-28		
	Adjustment/Test		501	ALL
	MAINTENANCE COMPLETION CHECK - CARGO DOOR	52-30-31		
	Inspection/Check		601	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	CARGO DOORS (CONT)	52-30-00		
	DOORS - CARGO COMPARTMENT	52-31-01		
	Removal/Installation		401	ALL
	ACTUATOR - CARGO DOOR LOCK	52-31-03		
	Removal/Installation		401	ALL
	SEAL - CARGO DOOR	52-31-05		
	Removal/Installation		401	ALL
	Approved Repairs		801	ALL
	LINER - CARGO DOOR	52-31-07		
	Removal/Installation		401	ALL
	ACTUATOR - CARGO DOOR LATCHING	52-31-08		
	Removal/Installation		401	ALL
	CABLE - PUSH-PULL, SAFETY STOP	52-31-10		
	Removal/Installation		401	001, 003-013, 015-031
R				
	CARGO DOOR CLOSED LIMIT SWITCH AND LIMIT SWITCH HEATER	52-31-16		
	Removal/Installation		401	ALL
	Adjustment and Test		501	ALL
	OPENING CONTROL HANDLE - LOCK ACTUATOR	52-31-18		
	Removal/Installation		401	ALL
	PUSH ROD CONTROL - SAFETY STOP	52-31-19		
R	Removal/Installation		401	002, 014 032-999

	Subject	Chapter Section Subject	Page	Effectivity
	CARGO DOORS (CONT)	52-30-00		
	CARGO DOOR ACTUATION SYSTEM	52-34-00		
R	Description and Operation		1	ALL
	Fault Isolation		101	ALL
R	Maintenance Practices		201	ALL
	Adjustment/Test		501	ALL
	ACTUATOR - CARGO DOOR LIFT	52-34-01		
	Removal/Installation		401	ALL
	GEARBOX - CARGO DOOR, (POWERED HINGE)	52-34-02		
	Removal/Installation		401	ALL

Subject	Chapter Section Subject	Page	Effectivity
CARGO DOORS (CONT)	52-30-00		
SHAFT - CARGO DOOR TORQUE Removal/Installation	52-34-03	401	ALL
GEARBOX - RIGHT-ANGLE DRIVE Removal/Installation	52-34-05	401	ALL
R MECHANISM - CARGO DOOR OPENING Removal/Installation	52-34-09	401	ALL
GUIDE ASSEMBLY - CARGO DOOR ROLLER Maintenance Practices	52-34-52	201	ALL
PIVOT PIN - HOOK, CARGO DOOR LOWER PRESSURE Inspection/Check	52-34-53	601	ALL
HOOK - CARGO DOOR Inspection/Check	52-34-54	601	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	SERVICE DOORS	52-40-00		
	Description and Operation		1	ALL
	GALLEY DOOR	52-41-00		
	Description and Operation		1	ALL
	DOOR - GALLEY	52-41-01		
	Removal/Installation		401	ALL
	Adjustment/Test		501	ALL
C	Inspection/Check		601	ALL
	SEAL - GALLEY DOOR	52-41-03		
	Removal/Installation		401	ALL
R	GALLEY DOOR TRIM PANEL	52-41-05		
R	Removal/Installation		401	ALL
	LATCH CLOSED SWITCH - GALLEY DOOR	52-41-10		
	Adjustment/Test		501	001-031 WITH SB52-075 AND 032-999

	Subject	Chapter Section Subject	Page	Effectivity
	SERVICE DOORS (CONT)	52-40-00		
	LATCHING AND LOCKING MECHANISMS	52-42-00		
	SPRING - RETRACTOR	52-42-01		
	Maintenance Practices		201	ALL
	Removal/Installation		401	ALL
C	LATCH - PITCH, GALLEY DOOR			
C	LIGHT RIG CHECK	52-42-04		
	Removal/Installation		401	ALL
R	Adjustment/Test		501	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	SERVICE DOORS (CONT)	52-40-00		
	ELECTRONIC/ELECTRICAL SERVICE DOORS	52-43-00		
R	Description and Operation		1	ALL
	DOOR - FORWARD ELECTRONIC SERVICE CENTER	52-43-01		
C	Maintenance Practices		201	ALL
	Removal/Installation		401	ALL
	SEAL - DOOR, FORWARD ELECTRONIC SERVICE CENTER	52-43-02		
	Removal/Installation		401	ALL
	DOOR - MID ELECTRICAL SERVICE CENTER (S-2)	52-43-03		
	Removal/Installation		401	ALL
	Adjustment/Test		501	ALL
	SEAL - DOOR, MID ELECTRICAL SERVICE CENTER (S-2)	52-43-04		
	Removal/Installation		401	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	SERVICE DOORS (CONT)	52-40-00		
	DOOR - FAIRING, MID ELECTRICAL SERVICE CENTER (S-2)	52-43-05		
	Removal/Installation		401	ALL
	HANDLE ASSEMBLY - FAIRING DOOR	52-43-06		
	Removal/Installation		401	ALL
	HANDLE ASSEMBLY - FORWARD ELECTRONIC SERVICE CENTER DOOR	52-43-07		
	Removal/Installation		401	ALL
	ENVIRONMENTAL CONTROL SYSTEM ACCESS DOORS	52-44-00		
R	Description and Operation		1	ALL
	DOOR - ACCESS, ENVIRONMENTAL CONTROL SYSTEM	52-44-01		
	Removal/Installation		401	ALL
	HYDRAULIC SERVICE CENTER DOORS	52-45-00		
R	Description and Operation		1	ALL
	DOOR - HYDRAULIC SERVICE CENTER	52-45-01		
	Removal/Installation		401	ALL
	DOORS - RAM AIR TURBINE	52-45-02		
	Removal/Installation		401	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	FIXED INTERIOR DOORS	52-50-00		
R	Description and Operation		1	ALL
	FLIGHT COMPARTMENT DOORS	52-51-00		
	Description and Operation		1	ALL
R	Fault Isolation		101	ALL
	DOOR - FLIGHT COMPARTMENT	52-51-01		
	Removal/Installation		401	ALL
	STRIKE - ELECTRIC RELEASE	52-51-02		
	Removal/Installation		401	ALL
	LATCH - KEY LOCK	52-51-03		
	Removal/Installation		401	ALL
	RELEASE SWITCH - DOOR LATCH, FLIGHT COMPARTMENT	52-51-04		
	Removal/Installation		401	ALL
	INTERIOR SERVICE DOORS	52-52-00		
R	Description and Operation		1	ALL
	DOOR - GALLEY WALL	52-52-01		
	Removal/Installation		401	ALL
	DOOR - BELOW DECK, FLIGHT COMPARTMENT	52-52-02		
	Removal/Installation		401	ALL
	INTERIOR SERVICE DOOR COVERING/LINERS	52-53-00		
	COVERING - BELOW DECK ACCESS DOOR, FLIGHT COMPARTMENT	52-53-01		
	Removal/Installation		401	ALL

	Subject	Chapter Section Subject	Page	Effectivity
	DOOR WARNING	52-70-00		
	DOOR WARNING SYSTEM	52-71-00		
R	Description and Operation		1	ALL
	Fault Isolation		101	ALL
	Maintenance Practices		201	ALL
	Adjustment/Test		501	ALL
	SENSORS - PROXIMITY, DOOR	52-71-03		
	Removal/Installation		401	ALL
	LANDING GEAR	52-80-00		
	MAIN LANDING GEAR DOORS	52-81-00		
	Description and Operation		1	ALL
CR	Adjustment/Test		501	ALL
	NOSE LANDING GEAR DOORS	52-82-00		
R	Description and Operation		1	ALL

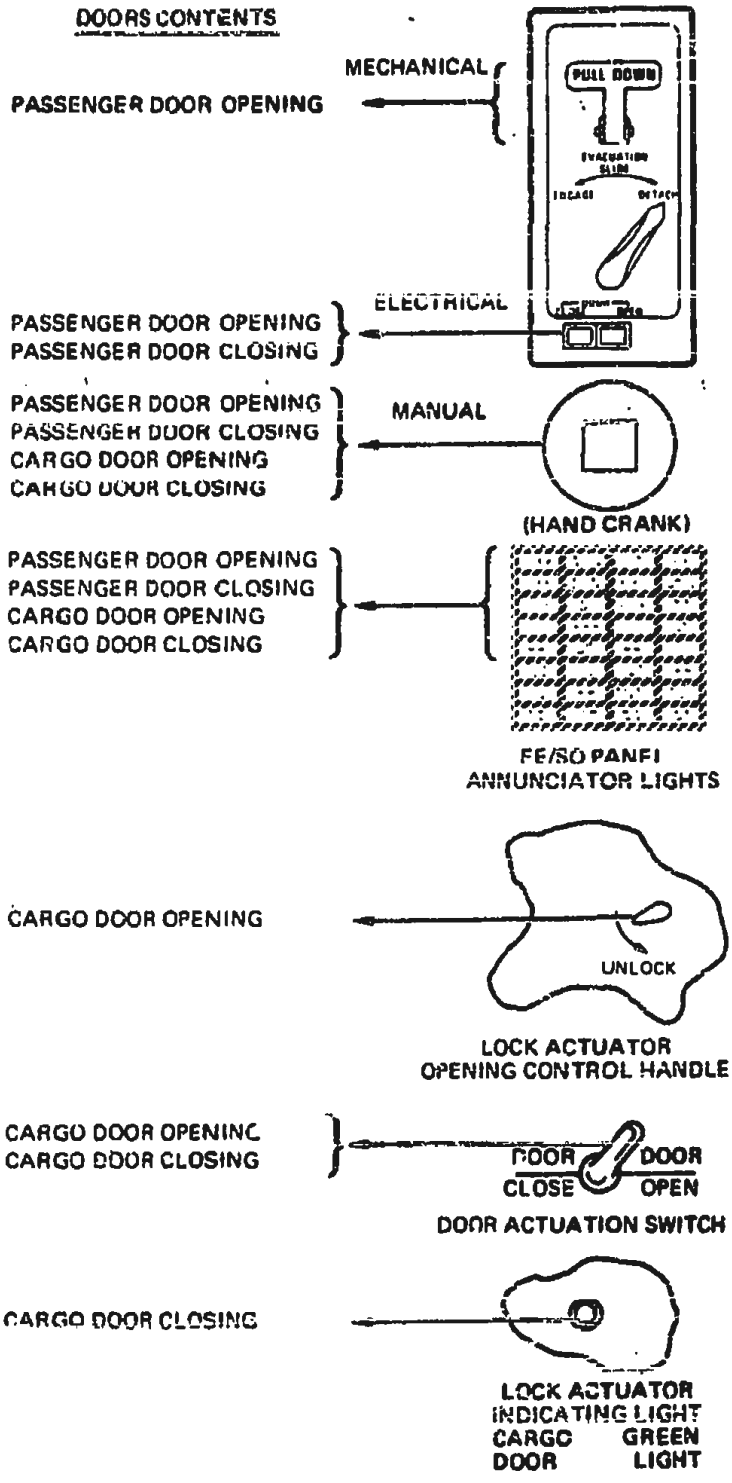
CHAPTER 52-DOORS

TABLE OF CONTENTS

Subject	Chapter/ Section Subject	Page
FAULT CODE DIAGRAMS		1
FAULT CODE INDEX		1
PASSENGER DOOR ACTUATION SYSTEM	52-12-00	
General		101
Fault Isolation/Identification		101
Component Location Index		103
Component Locator Diagram		104
Passenger Door Inoperative Electrically		105
Passenger Door Inoperative Manually (Handcrank) (Closing)		107
Passenger Door Inoperative Mechanically (Opening)		108
Passenger Door Air Leak		109
Passenger Door Opens Slowly, Mechanical Mode		110
L/R1 Passenger Door Actuation System Electrical Schematic		111/112
L/R2 Passenger Door Actuation System Electrical Schematic		113/114
R L/R3 Passenger Door Actuation System		
R Electrical Schematic		115/116
CARGO DOOR ACTUATION SYSTEM	52-34-00	
General		101
Fault Isolation/Identification		101
Cargo Door Component Location Index		103
Cargo Door System Component Locator Diagram		104
Cargo Door Will Not Unlock Electrically		112
Cargo Door Will Not Unlatch Electrically		113
Cargo Door Will Not Open Electrically		115
Cargo Door Will Not Close Electrically		116
Cargo Door Will Not Latch Electrically		117

Subject	Chapter/ Section Subject	Page
CARGO DOOR ACTUATION SYSTEM (CONT)	52-34-00	
Cargo Door Will Not Lock Electrically		118
Lock Actuator (green) Indicating Light On With Door Not Locked (Door Warning Light On)		119
Lock Actuator (green) Indicating Light Out With Door Locked (Door Warning Light Out)		120
C-1 Cargo Door Electrical Schematic		121/122
R C-2 Cargo Door Electrical Schematic		123/124
C-3 Cargo Door Electrical Schematic		125/126
FLIGHT COMPARTMENT DOOR	52-51-00	
General		101
Fault Isolation/Identification		101
Flight Compartment Door Component Location Index		102
Flight Compartment Door Component Location Diagram		103
Flight Compartment Door and Latch Fault Isolation		104
DOOR WARNING SYSTEM	52-71-00	
General		101
Fault Isolation/Identification		101
Component Location Index		102
Component Locator Diagram		103
Passenger Entry Door Warning Light Fault Isolation		104
Cargo Door Warning Light Fault Isolation		106
Service Doors Warning Light Fault Isolation		108
Cargo Door Warning Light Intermittent		110
Door Warning System Electrical Schematic		111/112

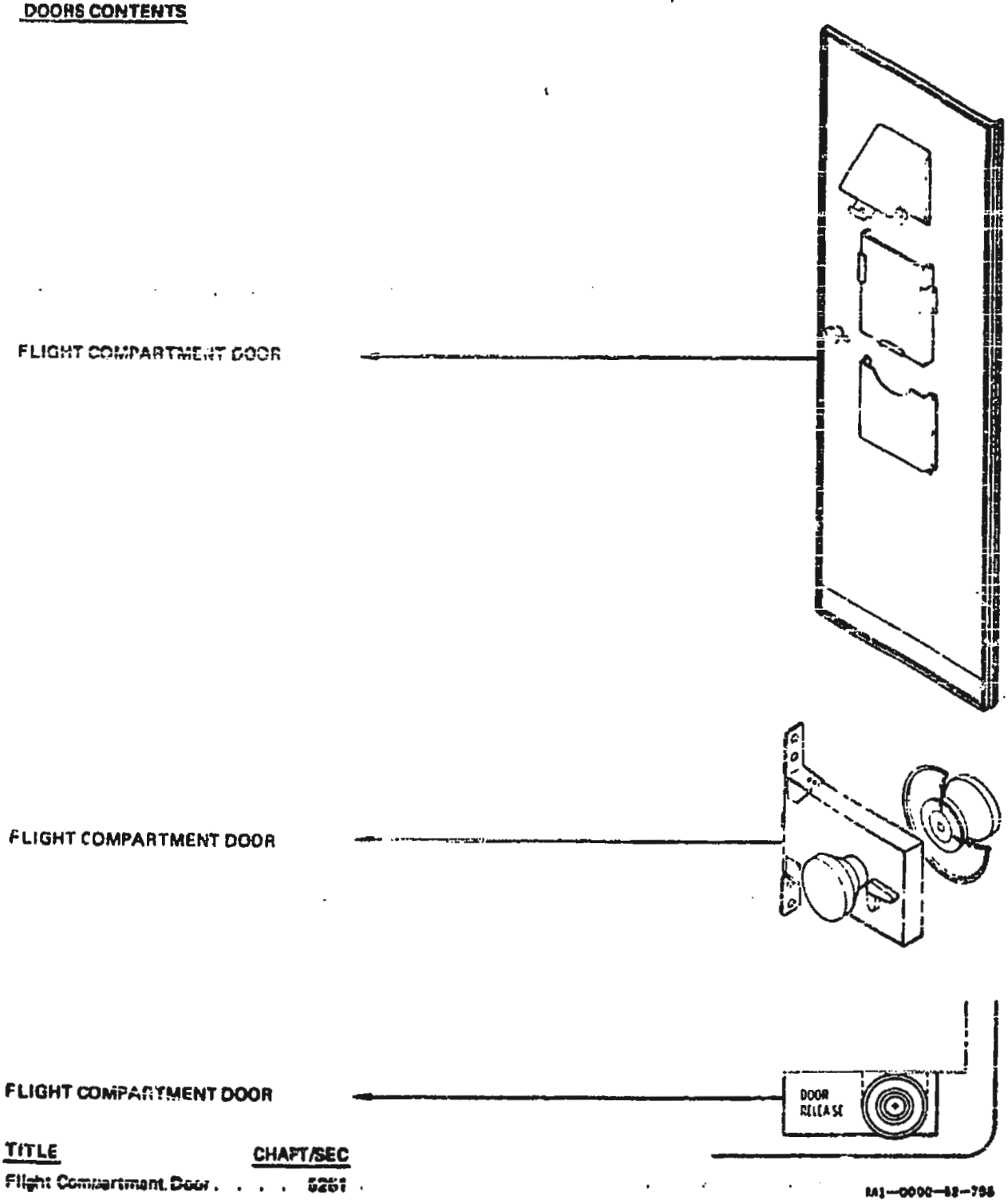
DOORS CONTENTS



M1-0000-82-720

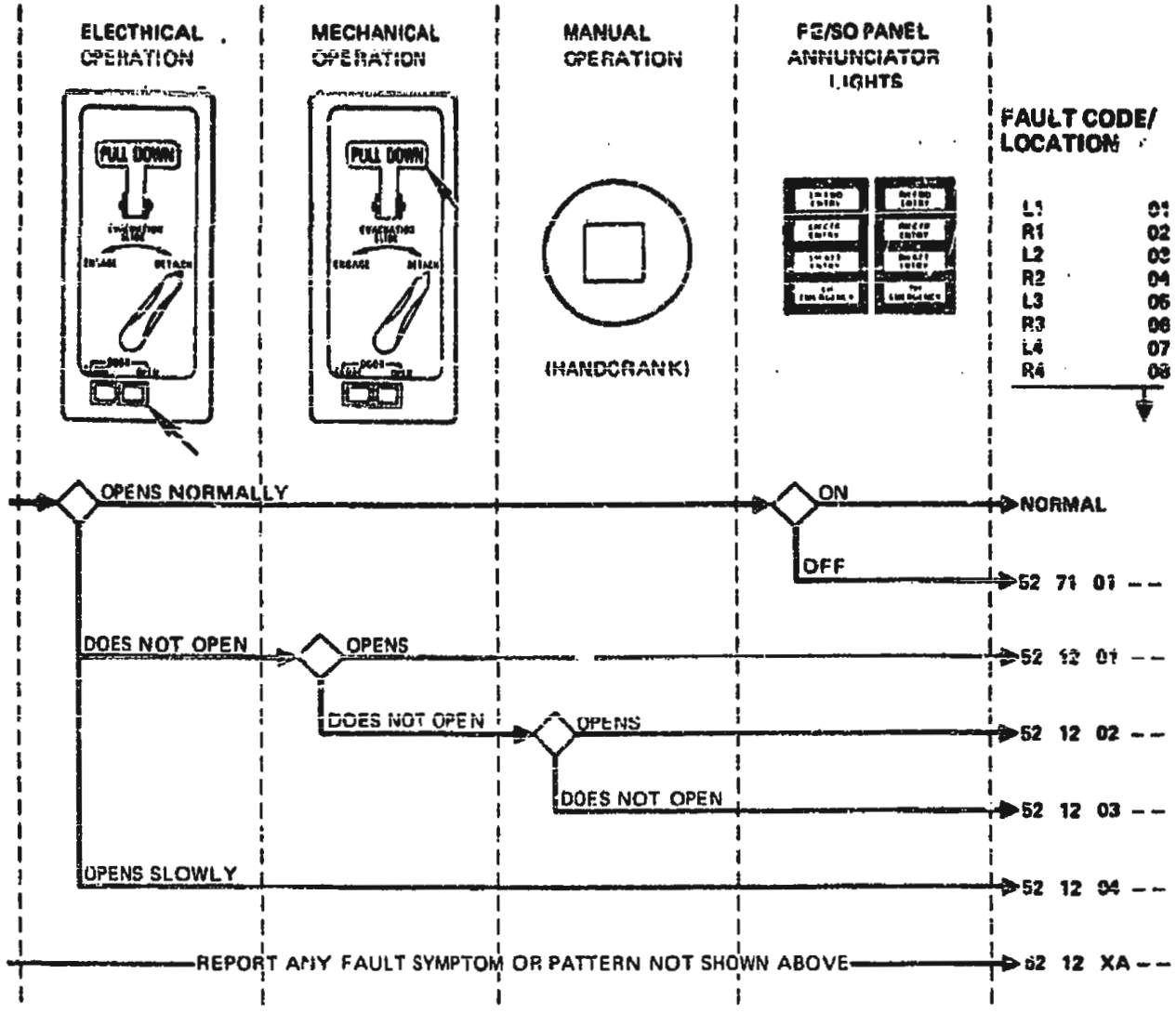
TITLE	CHAPT/SEC
PASSENGER DOOR OPENING	5212
PASSENGER DOOR CLOSING	5212
CARGO DOOR OPENING	5234
CARGO DOOR CLOSING	5234

DOORS CONTENTS



TITLE CHAPT/SEC
Flight Compartment Door 5251

RA1—0000—52—798



APPLICABLE CIRCUIT BREAKERS

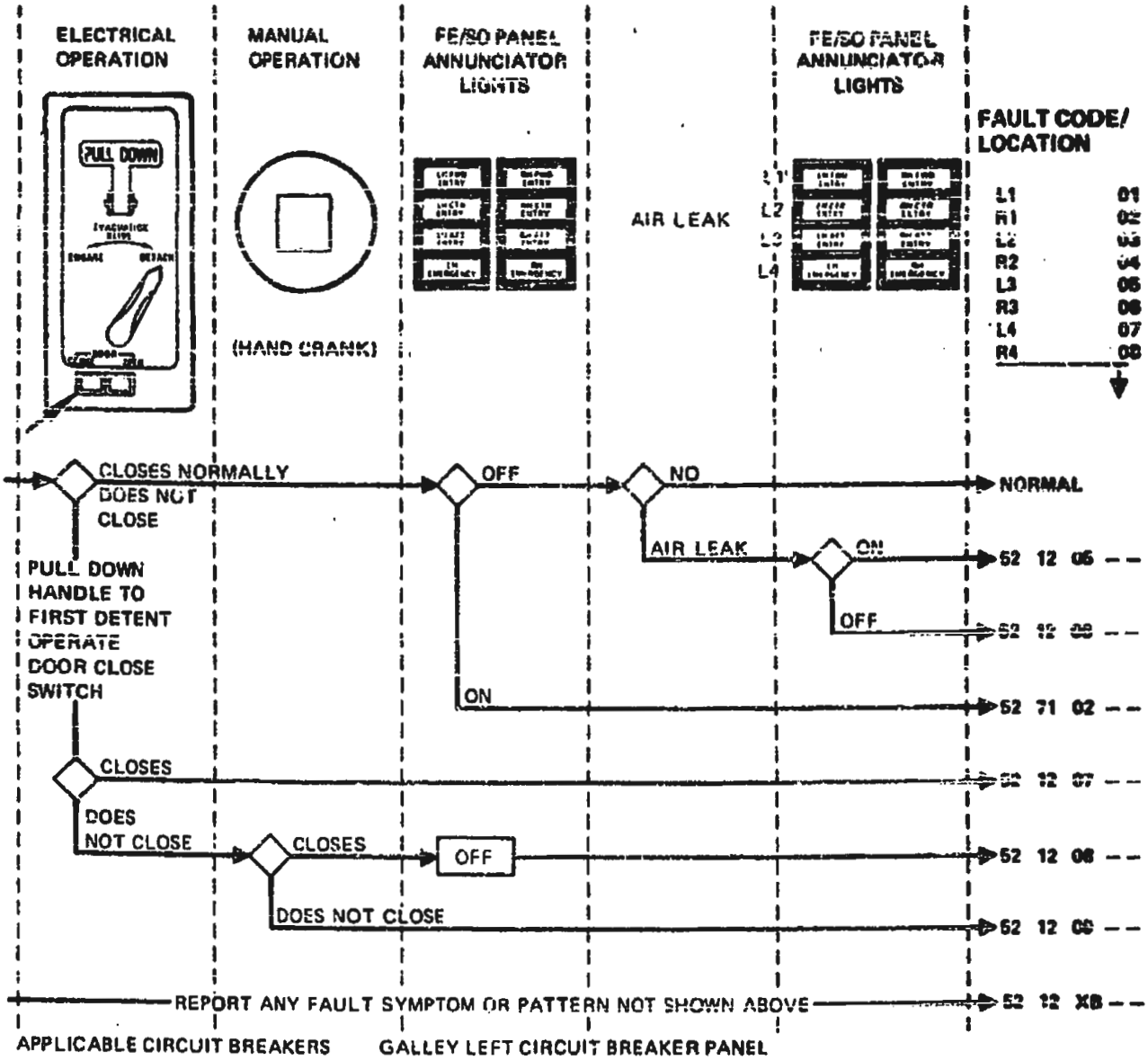
1L10	PROX SW PWR NO. 1
1L11	PROX SW PWR NO. 4
2L8	MLG GND SENSE
3H2	DOOR WARN LT
3H3	PROXIMITY SWITCH 2
3H4	PROXIMITY SWITCH 3

GALLEY LEFT CIRCUIT BREAKER PANEL

2A 5A	PASS DOOR ACTUATOR AFT – (LH, RH)
8A 11A	PASS DOOR ACTUATOR CENTER – (LH, RH)
14A 17A	PASS DOOR ACTUATOR FORWARD – (LH, RH)
19A	PASS DOOR CONTROL LH & RH – FWD
20A	PASS DOOR CONTROL LH & RH – CTR
21A	PASS DOOR CONTROL LH & RH – AFT

EDI-0008-52-001

R Passenger Door Opening - Fault Codes
Figure 1



APPLICABLE CIRCUIT BREAKERS

1L10	PROX SW PWR NO. 1
1L11	PROX SW PWR NO 4
2L8	MLG GND SENSE
3H2	DOOR WARN LT
3H3	PROXIMITY SWITCH 2
3H4	PROXIMITY SWITCH 3

GALLEY LEFT CIRCUIT BREAKER PANEL

2A, 5A	PASS DOOR ACTUATOR AFT – (LH, RH)
8A, 11A	PASS DOOR ACTUATOR CENTER – (LH, RH)
14A, 17A	PASS DOOR ACTUATOR FORWARD – (LH, RH)
19A	PASS DOOR CONTROL LH & RH – FWD
20A	PASS DOOR CONTROL LH & RH – CTR
21A	PASS DOOR CONTROL LH & RH – AFT

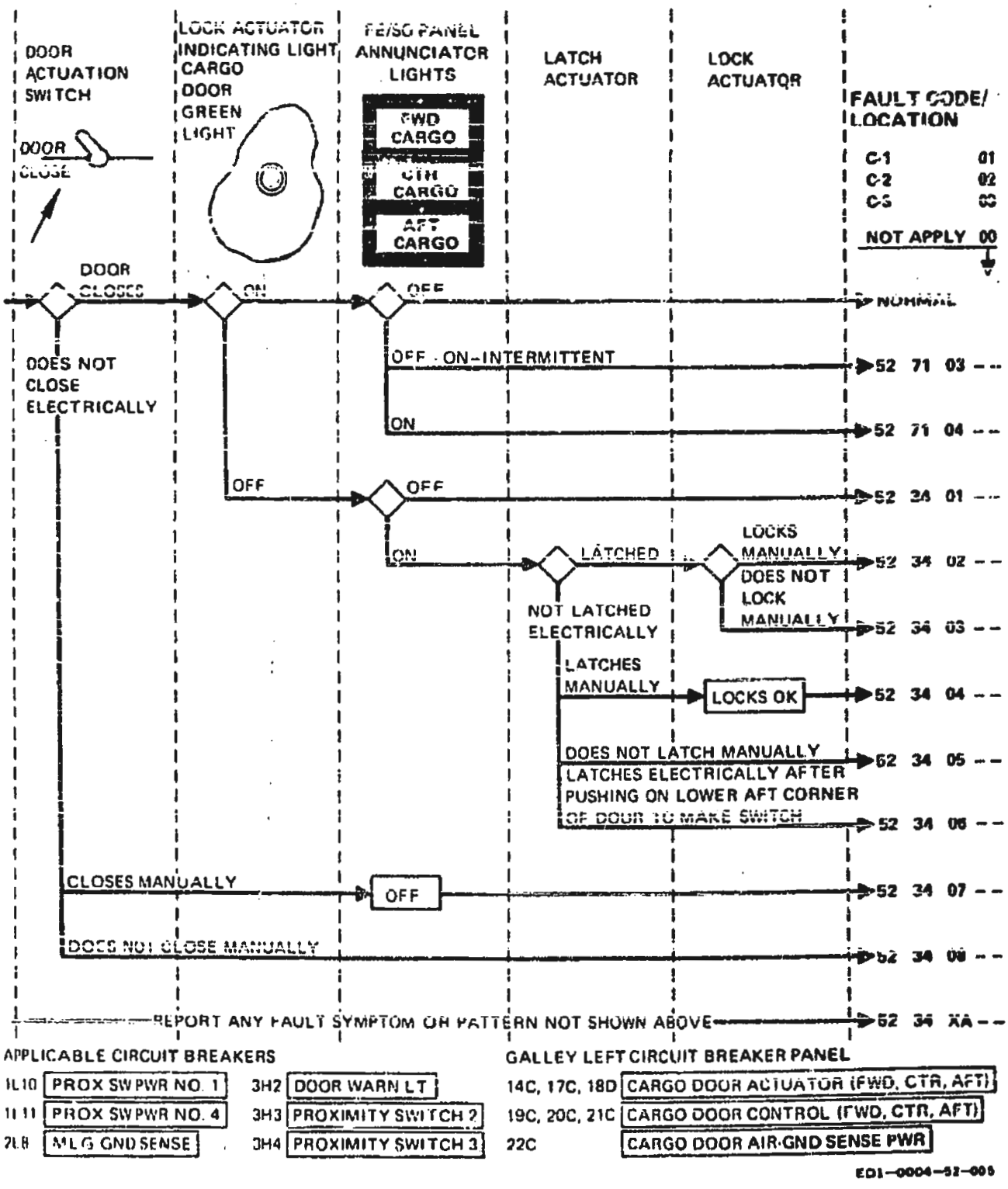
EDI-0206-52-003

R Passenger Door Closing - Fault Codes
Figure 2

EFFECTIVITY: ALL

05CB

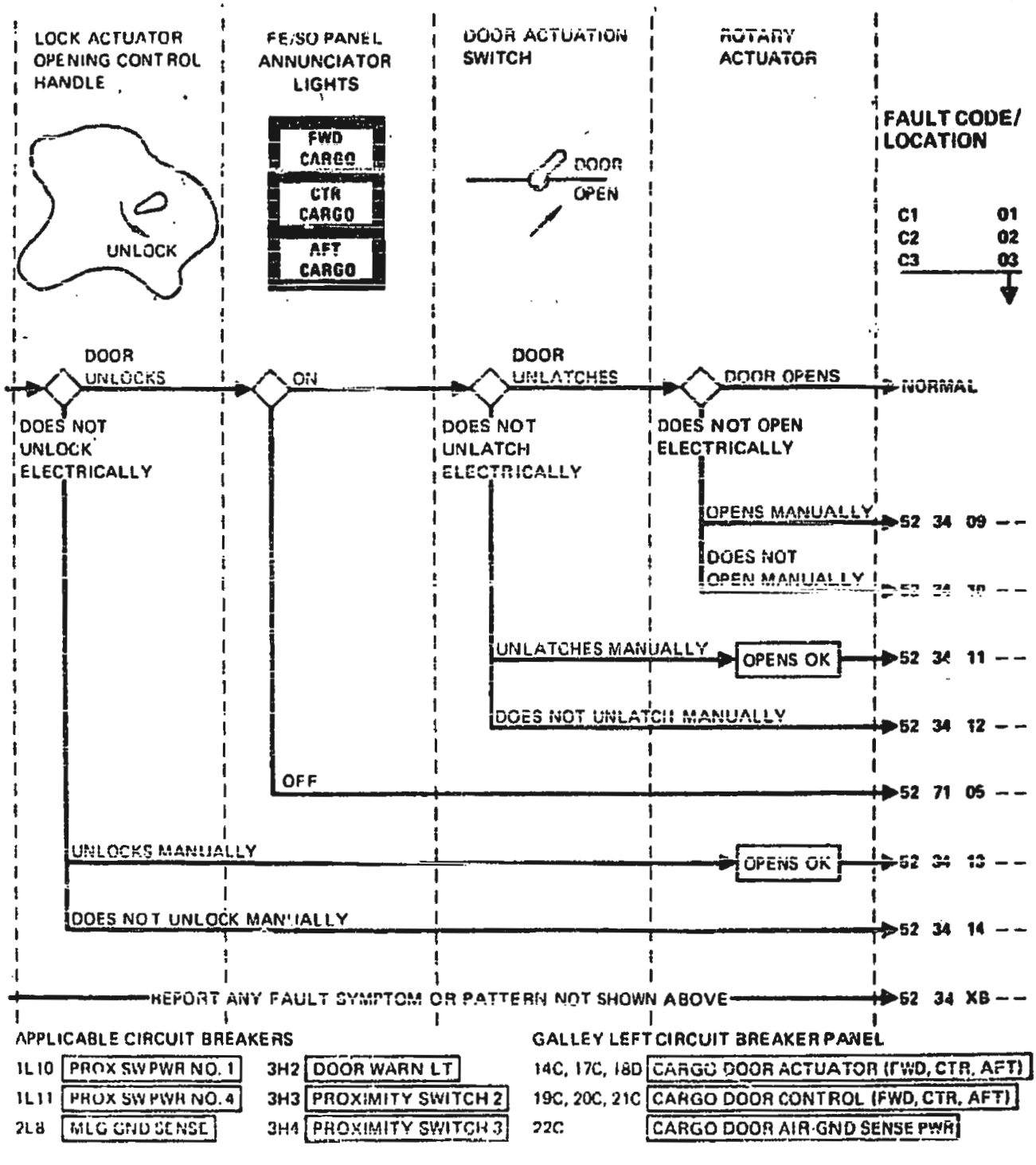
52-FAULT CODE DIAGRAM



R Cargo Door Closing - Fault Codes
Figure 3

R EFFECTIVITY: ALL

52-FAULT CODE DIAGRAM

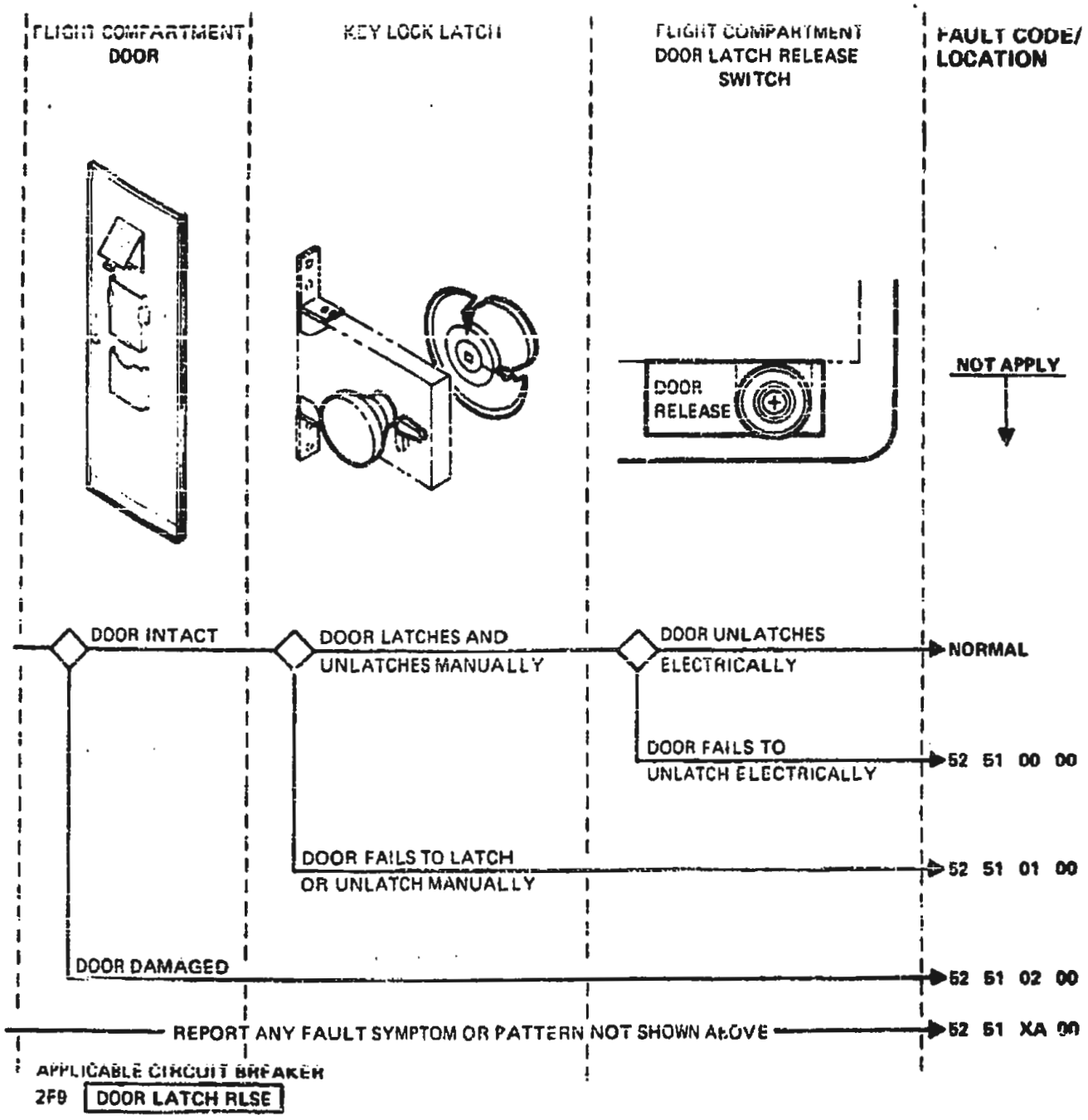


ED1-0002-52-006

R Cargo Door Opening - Fault Codes
Figure 4

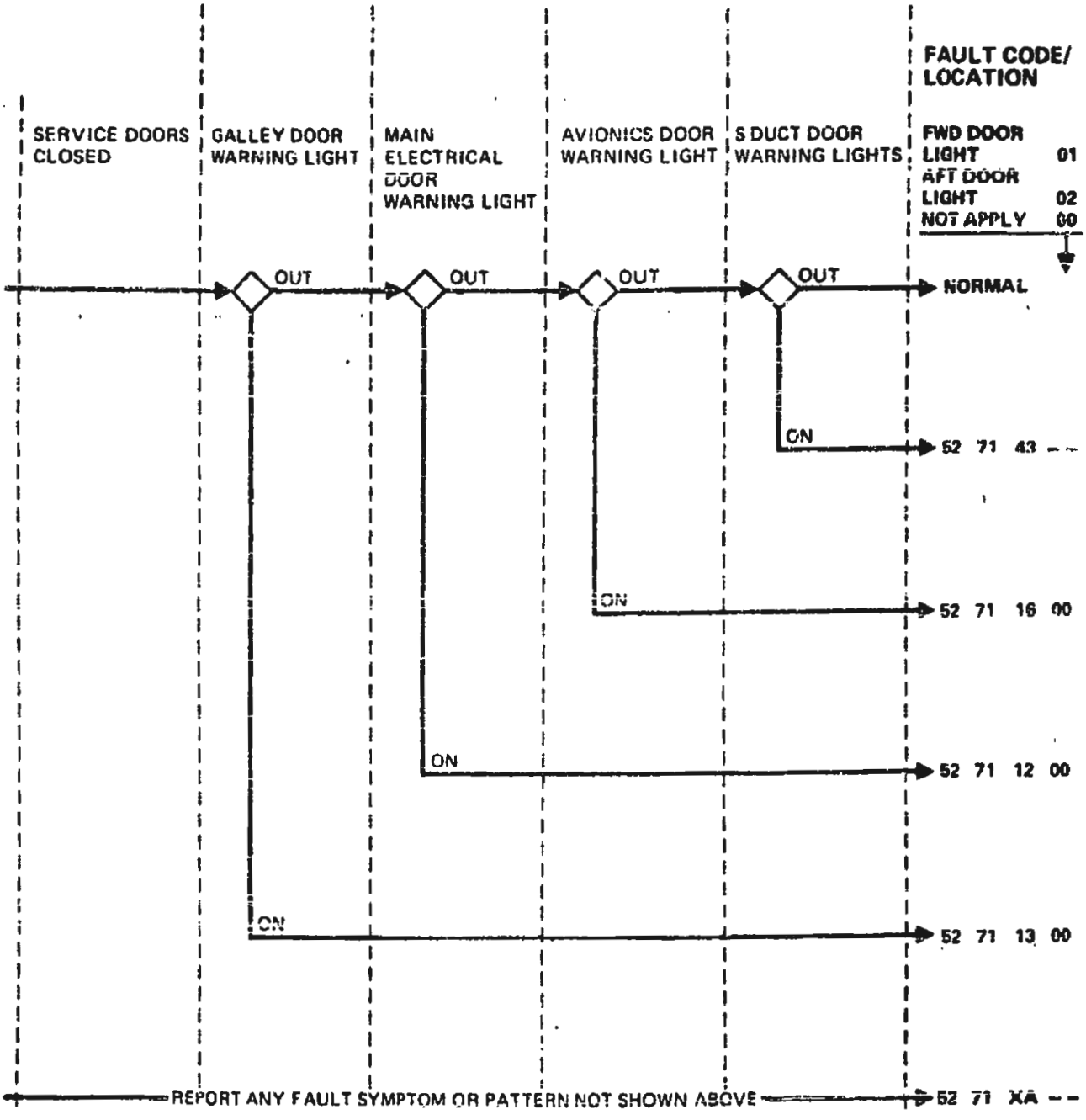
R EFFECTIVITY: ALL

52-FAULT CODE DIAGRAM



ED1-0000-52-020

R Flight Compartment Door and Latch - Fault Codes
Figure 5



APPLICABLE CIRCUIT BREAKERS

1L10	LANDING GEAR	PROX SW PWR	3H3	F/E IND LT TEST	
3H2	F/E IND LT TEST		3H4	F/E IND LT TEST	

ED1-0002-52-021

R Service Door Warning Lights - Fault Codes
Figure 6

R EFFECTIVITY: ALL

52-FAULT CODE DIAGRAM

FAULT CODE INDEX
TABLE 1

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
52 12 XA __	1. A Passenger Door Opening fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
	2. 52-12-00 Fig. 103 (Sheet 1) Block 1 52-12-00 Fig. 105 Block 1 52-12-00 Fig. 107 Block 1
52 12 XB __	1. A Passenger Door Closing fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
	2. 52-12-00 Fig. 103 (Sheet 1) Block 1 52-12-00 Fig. 104 Block 1 52-71-00 Fig. 103 (Sheet 1) Block 1 52-12-00 Fig. 106 Block 1
52 34 XA __	1. A Cargo Door Closing fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
	2. 52-34-00 Fig. 106 Block 1 52-34-00 Fig. 107 Block 1 52-34-00 Fig. 108 Block 1 52-34-00 Fig. 109 Block 1 52-34-00 Fig. 110 Block 1 52-71-00 Fig. 104 (Sheet 1) Block 1 52-71-00 Fig. 106 Block 1
52 34 XB __	1. A Cargo Door Opening fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
	2. 52-34-00 Fig. 103 Block 1 52-34-00 Fig. 104 (Sheet 1) Block 1 52-34-00 Fig. 105 Block 1 R 52-71-00 Fig. 104 (Sheet 1) Block 1 R 52-71-00 Fig. 106 Block 1

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE		
	1.	LOG BOOK REPORT
	2.	FAULT ISOLATION REFERENCE
R 52 51 XA 00	1.	A Flight Compartment Door and Latch fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
R	2.	52-51-00 Fig. 103 Block 1
52 71 XA __	1.	A Service Door Warning Lights fault was encountered by the crew which is not covered in the fault code diagram. (Ref. Fault Code diagram for flight crew actions.)
	2.	52-71-00 Fig. 103, 104, 105, 106 Block 1
52 12 01 __	1.	(01=L1, 02=R1, 03=L2, 05=L3, 06=R3) passenger door does not open electrically. Door opens mechanically.
	2.	52-12-00 Fig. 103 (Sheet 1) Block 1
52 12 02 __	1.	(01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3) passenger door does not open electrically or mechanically. Door opened manually.
	2.	52-12-00 Fig. 105 Block 2
52 12 03 __	1.	(01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3) passenger door does not open electrically, mechanically, or manually.
	2.	52-12-00 Fig. 105 Block 2
52 12 04 __	1.	(01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3) passenger door opens slowly electrically.
	2.	52-12-00 Fig. 103 (Sheet 1) Block 1
52 12 05 __	1.	(01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3) passenger door has air leak in flight, door warning light on.
	2.	52-12-00 Fig. 106 Block 2

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
52 12 06 __	1. (01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3) passenger door has air leak in flight, door warning light off.
	2. 52-12-00 Fig. 106 Block 7
52 12 07 __	1. (01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3) passenger door did not close electrically; pulled PULL DOWN (tee) handle to first detent, then the electrical operation OK.
	2. 52-12-00 Fig. 103 (Sheet 1) Block 4
52 12 08 __	1. (01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3) passenger door does not close electrically. Manually closed; door warning light off.
	2. 52-12-00 Fig. 103 (Sheet 1) Block 1
52 12 09 __	1. (01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3) passenger door does not close electrically or manually.
	2. 52-12-00 Fig. 104 Block 1
52 34 01 __	1. (01=C1, 02=C2, 03=C3) cargo door lock actuator (green) indicating light off. Door warning light off; door closed.
	2. 52-34-00 Fig. 110 Block 1
52 34 02 __	1. (01=C1, 02=C2, 03=C3) cargo door required manual locking.
	2. 52-34-00 Fig. 108 Block 3
52 34 03 __	1. (01=C1, 02=C2, 03=C3) cargo door would not lock electrically or manually.
R	2. 52-34-00 Fig. 108 Block 2

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
52 34 04 __	1. (01=C1, 02=C2, 03=C3) cargo door required manual latching. Lock OK.
	2. 52-34-00 Fig. 107 Block 1
52 34 05 __	1. (01=C1, 02=C2, 03=C3) cargo door does not latch electrically or manually.
	2. 52-34-00 Fig. 107 Block 6
52 34 06 __	1. (01=C1, 02=C2, 03=C3) cargo door latches electrically only after pushing in on lower aft corner of cargo door to close the door closed limit switch.
	2. 52-34-00 Fig. 107 Block 7
52 34 07 __	1. (01=C1, 02=C2, 03=C3) cargo door required manual closing. Latched and locked OK.
	2. 52-34-00 Fig. 106 Block 1
52 34 08 __	1. (01=C1, 02=C2, 03=C3) cargo door would not close electrically or manually.
	2. 52-34-00 Fig. 106 Block 5
52 34 09 __	1. (01=C1, 02=C2, 03=C3) cargo door required manual opening. Unlocked and unlatched OK.
	2. 52-34-00 Fig. 105 Block 3
52 34 10 __	1. (01=C1, 02=C2, 03=C3) cargo door would not open electrically or manually.
	2. 52-34-00 Fig. 105 Block 5
52 34 11 __	1. (01=C1, 02=C2, 03=C3) cargo door required manual unlatching opened OK.
	2. 52-34-00 Fig. 104 (Sheet 1) Block 6

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
52 34 12 __	1. (01=C1, 02=C2, 03=C3) cargo door would not unlatch electrically or manually. 2. 52-34-00 Fig. 104 (Sheet 1) Block 5
52 34 13 __	1. (01=C1, 02=C2, 03=C3) cargo door required manual unlocking, door opens OK. 2. 52-34-00 Fig. 103 Block 1
52 34 14 __	1. (01=C1, 02=C2, 03=C3) cargo door would not unlock electrically or manually. 2. 52-34-00 Fig. 103 Block 7
52 51 00 00	1. Flight Compartment Door fails to unlatch when Door Latch Release switch is depressed. 2. 52-51-00 Fig. 103 Block 2
52 51 01 00	1. Flight Compartment Door fails to latch or unlatch manually. 2. 52-51-00 Fig. 103 Block 6
52 51 02 00	1. Flight Compartment Door or hinge structure damaged. 2. 52-51-00 Fig. 103 Block 1
R 52 71 01 __ R R	1. (01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3, 07=L4, 08=R4) Passenger door open; door warning light off. 2. 52-71-00 Fig. 103 (Sheet 1) Block 2
R 52 71 02 __ R R	1. (01=L1, 02=R1, 03=L2, 04=R2, 05=L3, 06=R3, 07=L4, 08=R4) Passenger door closed, door warning light on. 2. 52-71-00 Fig. 103 (Sheet 2) Block 3

FAULT CODE INDEX
TABLE 1 (CONTINUED)

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
52 71 03 __	1. (01=C1, 02=C2, 03=C3) cargo door warning light off/on intermittently. Door closed, lock actuator (green) indicating light on. 2. 52-71-00 Fig. 106 Block 1
52 71 04 __	1. (01=C1, 02=C2, 03=C3) cargo door warning light on. Door closed, lock actuator (green) indicating light on. 2. 52-71-00 Fig. 104 (Sheet 2) Block 3
52 71 05 __	1. (01=C1, 02=C2, 03=C3) cargo door warning light off, door opens OK. 2. 52-71-00 Fig. 104 (Sheet 1) Block 2
52 71 06 00	1. NOT USED.
52 71 07 00	1. NOT USED.
52 71 08 00	1. NOT USED.
52 71 09 00	1. NOT USED.
52 71 10 00	1. NOT USED.
52 71 11 00	1. NOT USED.
52 71 12 00	1. MAIN ELECT door warning light on. 2. 52-71-00 Fig. 105 Block 1
52 71 13 00	1. GALLEY door warning light on. 2. 52-71-00 Fig. 105 Block 1
52 71 14 00	1. NOT USED.
52 71 15 00	1. NOT USED.

FAULT CODE INDEX
TABLE 1 (CONTINUED)

	FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
R	52 71 16 00	1. AVIONICS door warning light on.
R		2. 52-71-00 Fig. 105 Block 1
	52 71 17 00	1. NOT USED.
	52 71 18 00	1. NOT USED.
	52 71 19 00	1. NOT USED.
	52 71 20 00	1. NOT USED.
	52 71 21 00	1. NOT USED.
	52 71 22 00	1. NOT USED.
	52 71 23 00	1. NOT USED.
	52 71 24 00	1. NOT USED.
	52 71 25 00	1. NOT USED.
	52 71 26 00	1. NOT USED.
	52 71 27 00	1. NOT USED.
	52 71 28 00	1. NOT USED.
	52 71 29 00	1. NOT USED.
	52 71 30 00	1. NOT USED.
	52 71 31 00	1. NOT USED.
	52 71 32 00	1. NOT USED.
	52 71 33 00	1. NOT USED.
	52 71 34 00	1. NOT USED.
	52 71 35 00	1. NOT USED.
	52 71 36 00	1. NOT USED.
	52 71 37 00	1. NOT USED.

FAULT CODE INDEX
TABLE 1

FAULT CODE	1. LOG BOOK REPORT 2. FAULT ISOLATION REFERENCE
52 71 38 00	1. NOT USED.
52 71 39 00	1. NOT USED.
52 71 40 00	1. NOT USED.
52 71 41 00	1. NOT USED.
52 71 42 00	1. NOT USED.
52 71 43 __	1. (01=FWD door light, 02=AFT door light) S-DUCT door warning light on. 2. 52-71-00 Fig. 105 Block 1

DOORS - DESCRIPTION AND OPERATION

1. General

The doors (Ref. Fig. 1) are removable units which permit access to the fuselage or compartments within the fuselage by passengers, crew, or maintenance personnel. The doors are categorized according to function:

Passenger/crew doors

Emergency exit doors

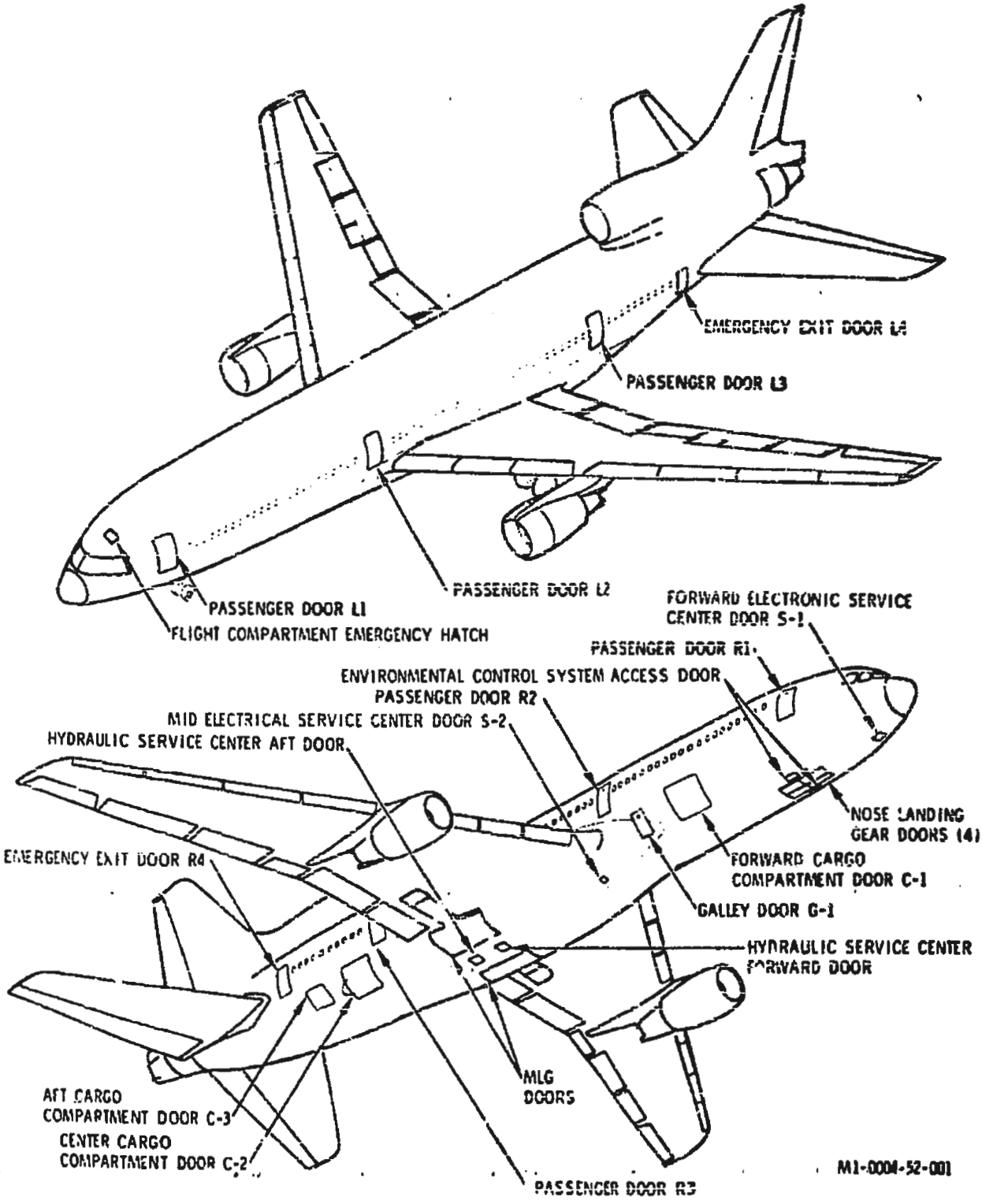
Cargo doors

Service doors

Fixed interior doors

Landing gear doors

A door warning system indicates to the flight crew that all doors are closed and latched.


EMERGENCY EXIT DOOR L4
PASSENGER DOOR L3
PASSENGER DOOR L2
PASSENGER DOOR L1
FLIGHT COMPARTMENT EMERGENCY HATCH
FORWARD ELECTRONIC SERVICE CENTER DOOR S-1
PASSENGER DOOR R1
ENVIRONMENTAL CONTROL SYSTEM ACCESS DOOR
PASSENGER DOOR R2
MID ELECTRICAL SERVICE CENTER DOOR S-2
HYDRAULIC SERVICE CENTER AFT DOOR
NOSE LANDING GEAR DOORS (4)
EMERGENCY EXIT DOOR R4
FORWARD CARGO COMPARTMENT DOOR C-1
GALLEY DOOR G-1
HYDRAULIC SERVICE CENTER FORWARD DOOR
MLG DOORS
AFT CARGO COMPARTMENT DOOR C-3
CENTER CARGO COMPARTMENT DOOR C-2
PASSENGER DOOR R3
M1-0004-52-001

R
R

Door Locations
Figure 1

EFFECTIVITY: ALL

0018

C LOCKING DEVICES - MAINTENANCE DATA NOTES, TOLERANCES & REGULATIONS

C 1. Installation of Locking Devices on Aircraft Doors

C A. Locks for all main entry doors and all cargo compartment and
C accessory compartment doors will be supplied for doors on
C the L-1011 aircraft as noted on the Security Lock Summary,
C Figure 201. Each kit will include all the locking devices
C required and will include a storage box for the locks. TWA
C stock numbers have been assigned for the individual lock
C devices as shown on security lock summary Figure 201.
C Reference Figure 201 (Sheet 1-3) for the physical
C arrangement of lock security.

C B. Policy related to the requirements for the locking of
C aircraft will be defined in the General Policy and
C Procedures Manual. Special keys for use with the locking
C devices will be distributed separately to each station by
C the Tooling and Equipment Department. Keys are made from a
C special blank that is available only from the lock
C manufacturer.

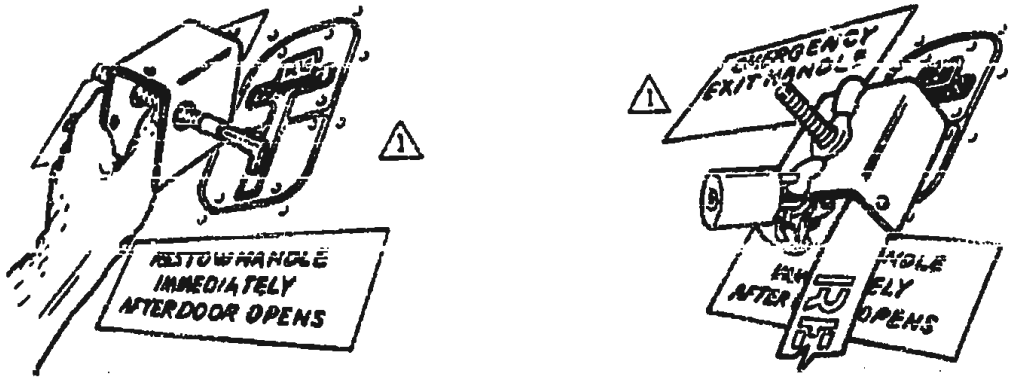
LOCK DWG. NO.	TWA STK. NBR.	TOTAL PER KIT	DOOR LOCATION			
			EXTERIOR LOCKING DOORS			INTERIOR LOCKING DOORS
			ELECTRONIC DOOR	LOWER GALLEY	FWD L.H. PASS	ALL PASS. EXCEPT FWD. L.H. PASS.
A-00099-1	48-2190	5			X	DOORS P2-P4
C-00056-1	48-2170	2	X X			
C-00092-1	48-2191	1		X		
C-00095-1	48-2192	1			X	
A-00099-2	48-2193	2				DOORS P5

M1-0000-52-218

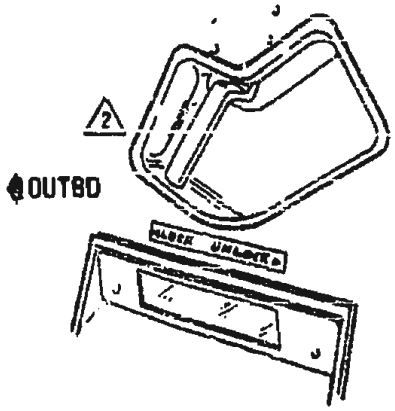
CR Door Locking Devices
CR Figure 201 (Sheet 1)

EFFECTIVITY: ALL

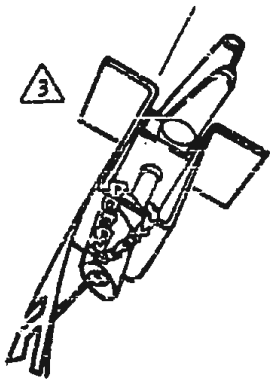
001B



PASSENGER DOOR EXTERIOR HANDLE



INTERNAL HANDLE TO GALLEY EXTERIOR DOOR



MID ELECTRONIC AND ELECTRICAL COMPARTMENT DOORS

NOTE

1. INSTALLATION OF LOCK, MFR. P/N C-00095-1, TWA STK. NBR. 48-2192, ON FORWARD L.H. PASSENGER DOOR MANUAL OPEN HANDLE.
2. INSTALLATION OF LOCK, MFR. P/N C-00092-1, TWA STK. NBR. 48-2191, ON GALLEY EXTERIOR DOOR.
3. INSTALLATION OF LOCK, MFR. P/N C-00056-1, TWA STK. NBR. 48-2170, ON FORWARD AND MID ELECTRONIC AND ELECTRICAL COMPARTMENT DOORS.

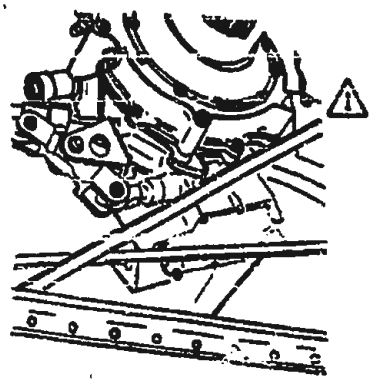
M1-0000-52-210

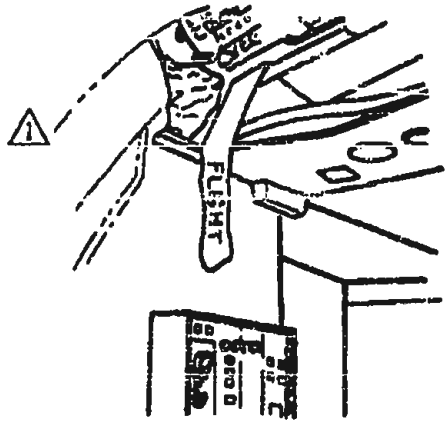
C
C

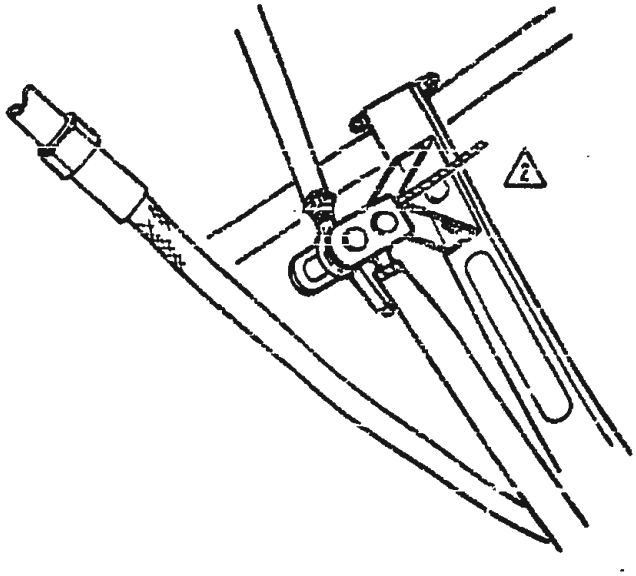
Door Locking Devices
Figure 201 (Sheet 2)

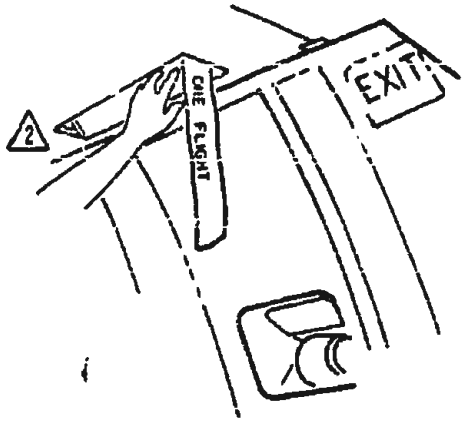
R
R
0018

EFFECTIVITY: ALL









NOTE

1. INSTALLATION OF LOCK, MFR. P/N A-00099-1, TWA STK. NBR. 48-2190, ON P2-P4 DOORS MANUAL OPEN LINKAGE
2. INSTALLATION OF LOCK, MFR. P/N A-00099-2, TWA STK. NBR. 48-2193, ON P5 DOOR MANUAL OPEN LINKAGE

M1-0000-52-220

C
C

Door Locking Devices
Figure 201 (Sheet 3)

R
R
001B

EFFECTIVITY: ALL

PASSENGER DOORS - DESCRIPTION AND OPERATION

1. General

Six passenger doors (Ref. 52-00-00, Fig. 1) provide access to the passenger compartment and also serve as emergency exits. The doors are located on each side of the fuselage and are identified as follows:

L1 passenger door - forward fuselage left side

R1 passenger door - forward fuselage right side

L2 passenger door - center fuselage left side

R2 Passenger door - center fuselage right side

L3 passenger door - aft fuselage left side

R3 Passenger door - aft fuselage right side

A window (Ref. 56-31-00) in each door allows the area next to the door to be inspected before opening the door.

Each door has an actuation system that includes an electrically operated actuator and a spring-loaded counterbalance. Each door is locked by a pin that engages a hole in the door track in the closed position and extends under the lower end of the raised track in the open position. The doors can be opened and closed electrically or manually.

An emergency escape slide (Ref. 25-61-00) is mounted on the inboard side of each door. The door is insulated with fire-retarding fiber glass blankets and covered with a decorative door lining.

2. Description

The L1 and R1 doors are located at FS 304.5 and 355.0, respectively. The L/R2 doors are located at FS 878. The L/R3 doors are located at FS 1513.

The L1 and R1 doors differ slightly in contour because of their offset positions in the forward fuselage. All L/R2 and L/R3 doors are interchangeable. The doors are inward-opening, plug-type units approximately 42 inches wide by 76 inches high.

The door structure (Ref. Fig. 1) is of conventional construction. The structural framework consists of an outer

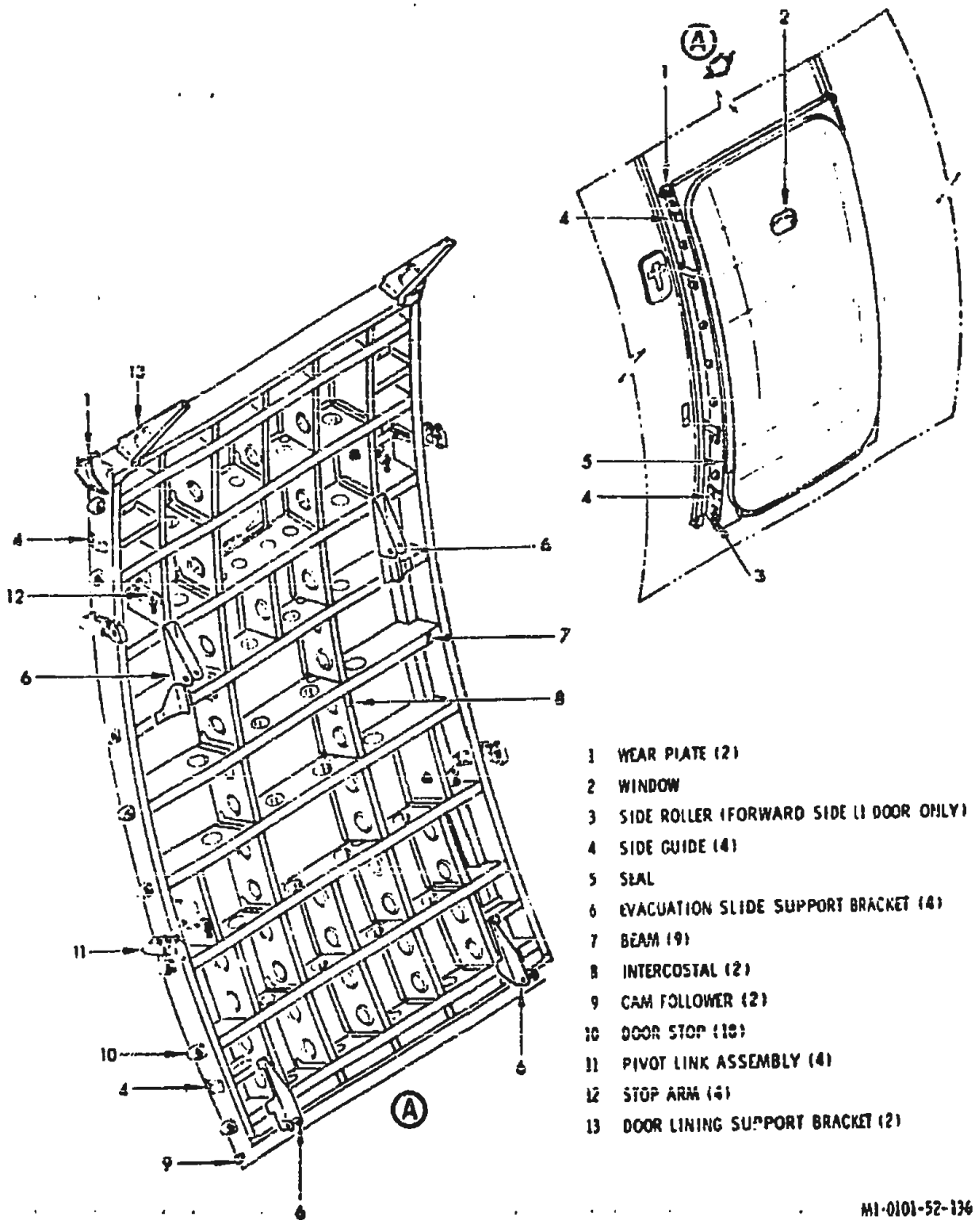
frame, beams, formers, intercostals, and skins made from aluminum alloy extrusions and forgings.

The door has 18 door stops, one at each end of each beam. Cabin air pressure loads are transferred from the door to the door surround structure through the stops.

When closed, the door is aligned in the door frame by the side guides on each side, the wear plates at the top of each side, and the rollers at the bottom of each side of the door.

A one-piece full-contoured silicon rubber door seal is attached to the door. The seal has a hollow cross section and is ventilated through holes along the perimeter. The seal is held in place by a silicon rubber seal retainer band and a contoured aluminum seal retainer.

Two door links on each side of the door attach the door to the door tracks. The tracks provide support for the door and are
R part of the door actuating mechanism.



1 WEAR PLATE (2)
2 WINDOW
3 SIDE ROLLER (FORWARD SIDE LI DOOR ONLY)
4 SIDE GUIDE (4)
5 SEAL
6 EVACUATION SLIDE SUPPORT BRACKET (4)
7 BEAM (9)
8 INTERCOSTAL (2)
9 CAM FOLLOWER (2)
10 DOOR STOP (10)
11 PIVOT LINK ASSEMBLY (4)
12 STOP ARM (4)
13 DOOR LINING SUPPORT BRACKET (2)

R
R

Passenger Door (Typical)
Figure 1

PASSENGER DOOR - REMOVAL AND INSTALLATION

1. General

These procedures are for removing a passenger door and installing the same door at the same location. The procedures for removing and installing each passenger door are the same.

If a door, other than the one removed, is to be installed refer to complete rigging adjustments (Ref. 52-11-01).

2. Equipment and Materials

Rigpin, PN B994, or equivalent

General Purpose Sling, PN B715, or equivalent

Door support dolly with protective padding

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

R Metal Activated Sealing and Retaining Compound, MIL-S-22473D,
R Grade C, Loctite Corp., or equivalent

3. Referenced Procedures

25-61-04	Double Slide Door Mounted Container - Removal and Installation
52-11-01	Passenger Door - Adjustment and Test
52-11-52	Door Seal - Removal and Installation
52-12-00	Door Actuation System - Adjustment and Test
52-12-00	Door Actuation System - Description and Operation
52-13-01	Door Lining - Removal and Installation

4. Removal/Installation

A. Removal

(1) Open door approximately 3 inches (Ref. 52-12-00).

(2) Remove emergency escape slide (Ref. 25-61-04).

(3) Remove door lining (Ref. 52-13-01).

(4) Close door (Ref. 52-12-00).

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(5) Open and tag applicable passenger door circuit breakers (Ref. 52-12-00, Adjustment and Test, Table 501).

(6) Tag electric and manual door controls.

(7) Install rigpin in actuator (Ref. Fig. 401, View B).

(8) Lock counterbalance (Ref. Fig. 401, View C) by rotating socket A in LOCK direction until socket B is in the LOCK position. While rotating socket A oscillate socket B to ensure engagement of worm shaft and worm gear.

(9) Loosen each pivot antirotation set screw two complete turns (Ref. Fig. 401, View D).

WARNING: BRACE DOOR IN DOOR OPENING TO PREVENT IT FROM FALLING INWARD WHEN DOOR PIVOTS ARE REMOVED. DOOR WEIGHS APPROXIMATELY 130 POUNDS.

(10) Remove lower pivot bolts, pivots, and pivot shims (Ref. Fig. 401, View E). Identify and retain shims in groups as removed.

(11) Remove upper pivot bolts, pivots, and pivot shims. Identify and retain shims in groups as removed.

(12) Manually lift door slightly and move inboard to attach general purpose sling (Ref. Fig. 401, View F).

(13) Lower door to padded door support dolly.

B. Installation

(1) Install door seal (Ref. 52-11-52) if required.

(2) Verify that circuit breakers opened in Step 4A(6) are opened and tagged.

(3) Verify that electric and manual door controls are tagged.

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(4) Raise door to installation position using general purpose sling.

WARNING: BRACE DOOR IN DOOR OPENING TO PREVENT IT FROM FALLING INWARD UNTIL PIVOTS ARE INSTALLED.

(5) Install door in opening. Cam followers at lower sides of door will be resting on lower ramps (Ref. Fig. 401, View G).

(6) Attach link rods to door tracks with pivots, pivot shims, and pivot bolts. Replace shims in groups identified in Steps 4A(11) and 4A(12).

(7) Align arrowhead on pivot with the antirotation set screw at each pivot link (Ref. Fig. 401, View D). Do not tighten setscrews.

R (8) Tighten pivot bolts. Lock-wire pivot bolt to pivot.
R Tighten set screws and secure with metal activated sealing and retaining compound.

(9) Unlock counterbalance.

(a) Rotate socket B counterclockwise for left doors, clockwise for right doors, until socket becomes loose (no load in either direction).

(b) Torque socket A in UNLOCK direction until socket B is in UNLOCK position and rotates freely.

(10) Remove rigpin from actuator.

(11) Remove tags from electric and manual door controls.

(12) Remove tags and close circuit breakers opened in Step 4A(6).

(13) Verify door operation (Ref. 52-12-00).

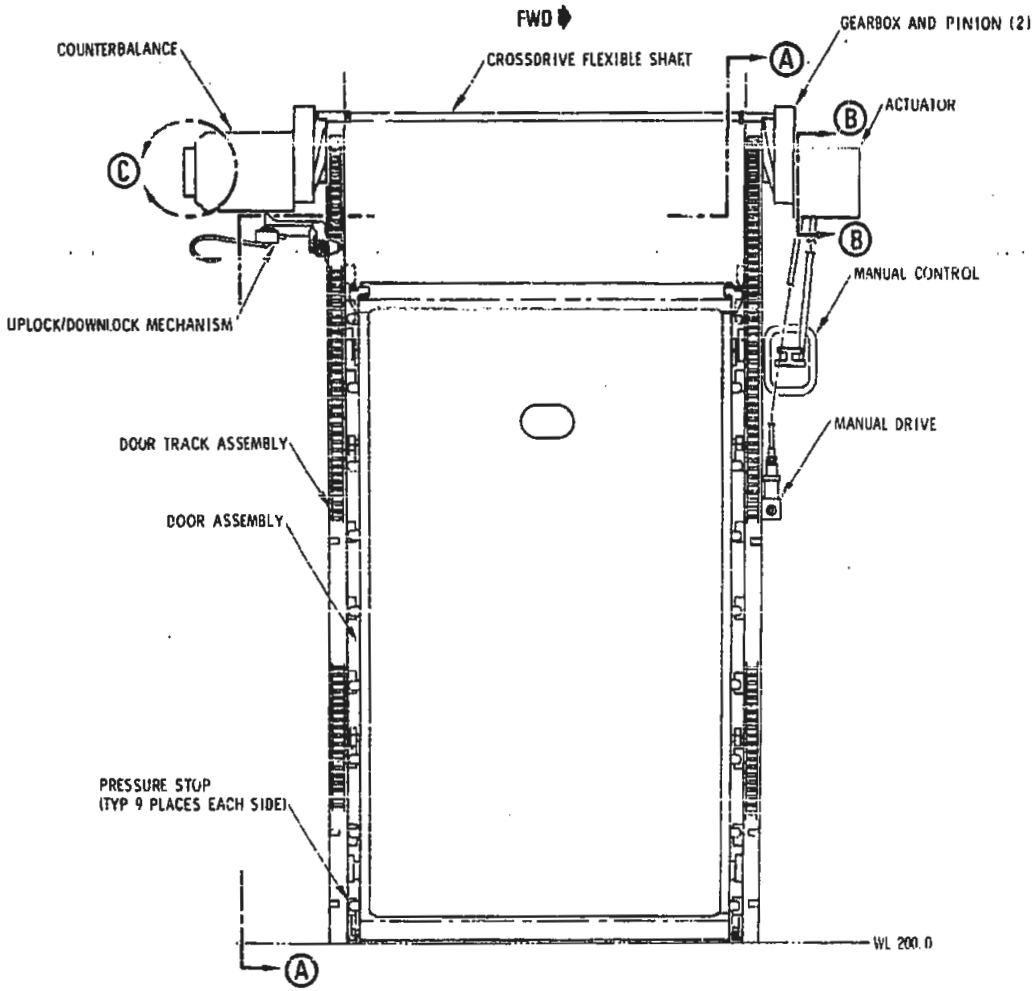
(14) Close door.

(15) Install door shroud and trim.

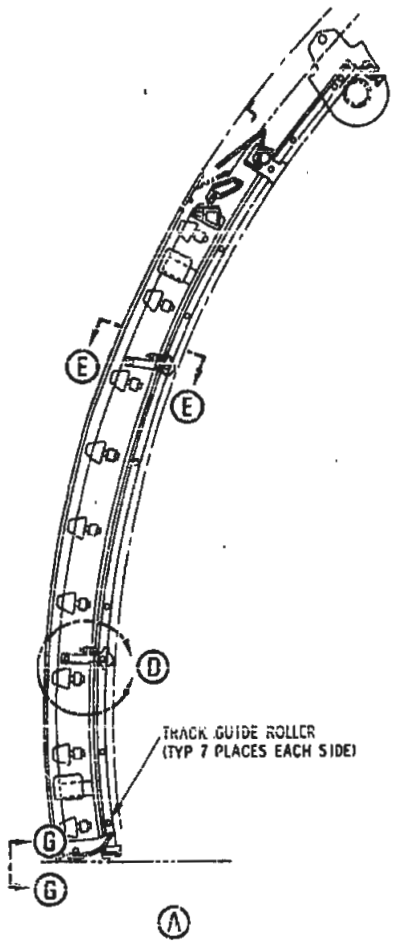
(16) Open door approximately 3 inches.

(17) Install door lining (Ref. 52-13-01).

(18) Install emergency escape slide (Ref. 25-61-04).



VIEW LOOKING OUTBOARD
LEFT DOOR SHOWN - RIGHT DOOR OPPOSITE

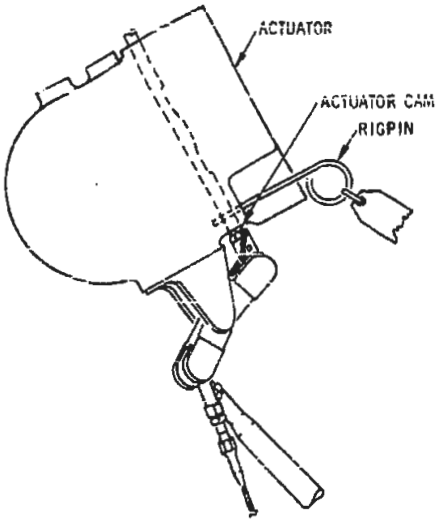


G 1038
M1-0101-52-010

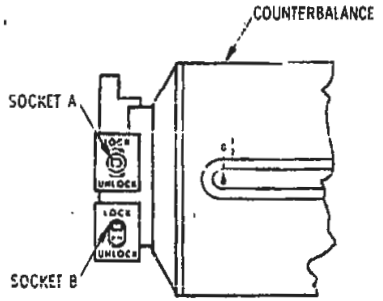
R Passenger Door - Removal and Installation
R Figure 401 (Sheet 1)

EFFECTIVITY: ALL

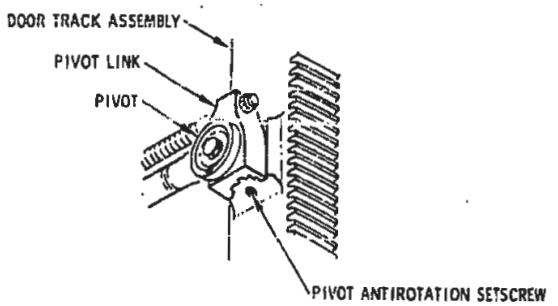
050



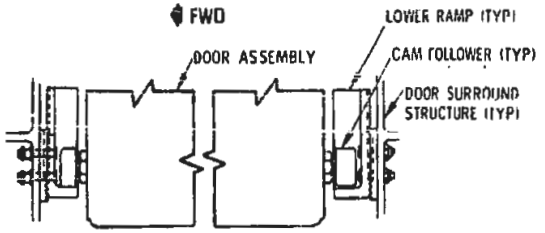
B



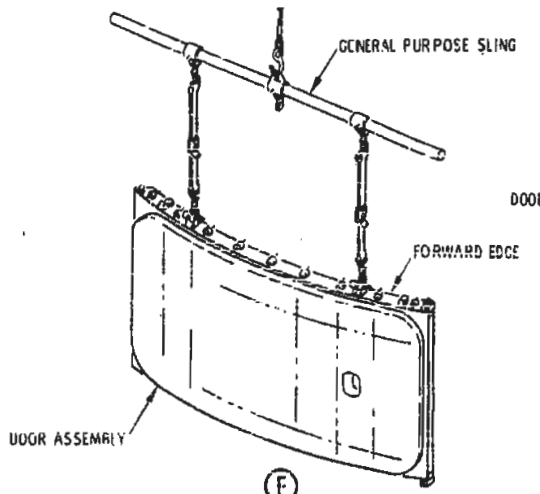
C



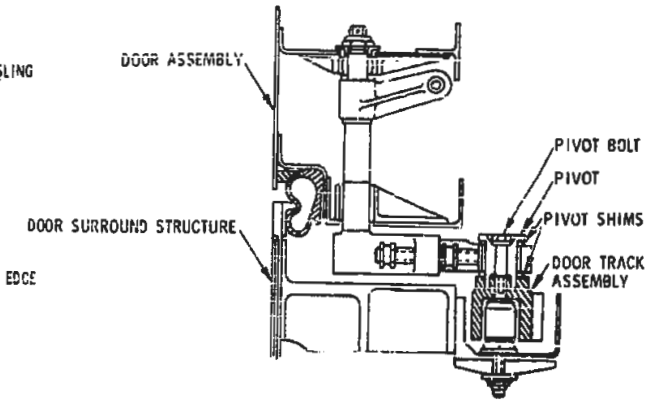
D



G



F



E

G 1039
M1-0101-52-011

Passenger Door - Removal and Installation
Figure 401 (Sheet 2)

PASSENGER DOOR - ADJUSTMENT AND TEST

1. Adjustment/Test - Passenger Door

A. General

This procedure outlines the rigging adjustments necessary to position a door in the door opening so that the door can be operated electrically or manually. Steps to fair the door with the fuselage are included.

The procedure is applicable to each passenger door.

B. Equipment and Materials

Wedges and blocks

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Bubble protractor

R Metal Activated Sealing and Retaining Compound,
R MIL-S-22473D, Grade C, Loctite Corp., or equivalent

C. Referenced Procedures

52-11-52, Door Seal - Removal and Installation

52-12-00, Door Actuation System - Adjustment and Test

D. Rigging Adjustments

(1) Verify that the following has been performed:

(a) Door seal is installed (Ref. 52-11-52).

(b) Door pivot link rotational force does not exceed 10 lb in.

(c) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breakers PASS DOOR ACTUATOR and PASS DOOR CONTROL (Ref. 52-12-00, Adjustment and Test, Table 501).

(d) Electrical and manual door controls are tagged.

(e) Rigpin is installed in actuator (Ref. Fig. 501).

(f) Counterbalance is locked by rotating socket A in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(g) Door tracks are secured with C-clamps against track guide rollers immediately above and below door pivot link fitting attach points.

(h) Cross-drive flexible shaft is disconnected at one end.

(2) Remove spring clips from pivot nuts A and B and back off nuts until flush with ends of threads. Retain spring clips.

(3) Remove wire locks from door pressure stop bolts and back off bolts until flush with threaded inserts. Retain wire locks.

(4) Remove shims from under upper ramp pads at upper corner fittings. Replace pads on fittings.

(5) On door, remove shims from under side roller assembly at lower forward side of door. Replace roller assembly.

NOTE: If Steps 1D(5) through 1D(8) are performed, replace door in door opening in accordance with Steps 1D(9) and 1D(10).

(6) Remove shims from under side wedges on door surround structure. Replace wedges.

(7) Loosen bolts holding lower ramp at aft side of door surround structure and lower ramp.

(8) Remove shims from under lower track stop bumper. Replace bumper.

WARNING: SUPPORT DOOR IN DOOR OPENING UNTIL DOOR PIVOT LINK FITTINGS ARE INSTALLED TO PREVENT DOOR FROM FALLING INWARD. DOOR WEIGHS APPROXIMATELY 130 LB.

(9) Place door in door opening so that forward cam follower rests on forward lower ramp.

NOTE: If requirements of Steps 1D(9) and 1D(10) cannot be satisfied, remove door from opening and perform Steps 1D(5) through 1D(8), as required.

(10) Position door in door opening using wedges and/or blocks for lateral restraint to maintain dimensions A and B. For L1 and R1 doors, dimension B must be 0.070 (±0.010) in. greater than dimension A. For L/R2 and L/R3 doors, dimensions A and B must be equal within 0.030 in. Measure dimensions A and B above upper door stop and below lower door stop at each side of door. Verify gaps between door and fuselage (Ref. Fig. 502).

(11) Temporarily attach door pivot link fittings to door tracks with pivots and pivot bolts. Do not install pivot shims.

(12) Determine gap dimensions G and H at each pivot link fitting.

NOTE: Gaps G and H (Ref. Fig. 501, Sheet 3) are measured with door tracks clamped against the guide rollers. By adding and subtracting the dimensions referenced in Step (13) and installing the appropriate shims, clearance will be assured between the end of the guide roller and the adjacent inner surface of the door track.

(13) Determine shims required at each fitting by adding 0.050 to 0.056 in. to dimension G, and subtracting 0.064 to 0.070 in. from dimension H. Final arrangement of shims must allow 0.004 to 0.010 in. clearance gap at each side of pivot link fitting.

(14) Remove pivots and fittings from tracks.

(15) Remove C-clamps from tracks.

NOTE: Aft track must be supported until pivot link fittings are installed.

(16) Attach pivot link fittings to tracks with pivots (flat on pivot must face downward on track), pivot bolts, and pivot shims determined in Step 1D(13).

R (17) Apply metal activated sealing and retaining compound to
R pivot antirotation setscrew threads and tighten
R setscrews in tracks below each pivot.

(18) Lock-wire each pivot bolt to pivot.

NOTE: In Steps 1D(19) and 1D(20), aircraft must be level laterally within ±0.50 degrees.

Angle is measured by laying bubble protractor across top of pivot link fittings.

(19) Lift forward track by rotating manual drive to attain correct angle at lower pivot link fitting.

NOTE: Manual drive speed wrench assembly or 1/2-inch drive speed wrench may be used to turn manual drive socket.

(20) Measure gap between lower end of forward track and track stop bumper. Record measurement.

(21) Lift aft track by rotating socket B at counterbalance to attain correct angle at lower pivot link fitting. Clamp track against rollers.

(22) With outboard inner face of track contacting track guide rollers, adjust nut A at all pivot links to fair door with fuselage in accordance with Figure 502.

(23) Adjust door pressure stop bolts to contact stop fittings on door surround structure. Use wire locks retained in Step 1D(3) to lock bolts in place.

NOTE: If wire lock cannot be inserted, back off bolt to next slot.

(24) Back off nut A two turns at each link. Use spring clip retained in Step 1D(2) to lock nuts in place.

(25) Raise forward track 0.100 (±0.020) inch using manual drive.

CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST BE ALIGNED WITH SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT.

IF MALE END OF SHAFT WILL NOT ENGAGE WITH SOCKET, RAISE FORWARD TRACK MINIMUM ADDITIONAL DISTANCE TO ALLOW ENGAGEMENT.

(26) Connect cross-drive flexible shaft to gearbox. Tighten coupling nut finger-tight and lock-wire nut to structure.

(27) With forward cam follower resting on forward ramp, measure and record gap between aft cam follower and ramp. Determine distance aft ramp must be moved to attain gap of 0.035 in. or less.

NOTE: Do not remove lateral restraint or move door. If gap is greater than 0.035 inch, move ramp up one additional serration.

NOTE: Mark position of ramp for later torquing of fasteners when door is open. Do not remove lateral restraint or move door.

(28) Measure gap at each side wedge and determine shims required to attain 0.050 (±0.010)-in. gap. Record measurement.

(29) Measure gap at each upper ramp pad and determine shims required to attain 0.10 (±0.02)-in. gap. Record measurements.

(30) On door, measure gap between side roller assembly and ramp at lower forward side of door. Determine shims required to attain 0.050 (±0.010)-in. gap. Record measurement.

(31) Remove lateral restraint installed in Step 1D(10).

NOTE: With lateral restraint removed, door may bear against side wedges on one side with a gap of 0.120 in. maximum on opposite side.

(32) Remove rigpin from actuator.

(33) Unlock counterbalance.

(a) Rotate socket B counterclockwise for left doors, clockwise for right doors, until socket becomes loose (no load in either direction).

(b) Torque socket A in UNLOCK direction until socket B is in UNLOCK position and rotates freely.

(34) Remove tags from door controls.

CAUTION: DO NOT PULL MANUAL CONTROL HANDLE PAST FIRST DETENT.

(35) Place inner manual control handle in first detent position.

(36) Using manual drive, raise door to dimension C.

(37) Adjust stop arm setscrew, at each pivot link, to attain correct dimensions from contour. Lock setscrew in place with jamnut and lock-wire nut to stop arm.

(38) With door in inboard position, adjust link length as follows:

(a) For L/R1, L/R2, or L/R3 doors, adjust nuts B to make door edge parallel to door surround structure within 0.030 inch over length of door. Adjust nuts B at upper aft link and lower forward link to attain dimension F of 0.100 (±0.010) inch at one link and 0.100 inch or greater at other link.

(39) Adjust each remaining nut B to contact pivot link.

(40) Install shims at each upper ramp pad as measured and recorded in Step 1D(29).

(41) Place inner manual control handle in stowed position.

(42) Reinstall rigpin in actuator.

(43) Raise door above doorway opening using manual drive.

(44) Install or remove shims at each side wedge as measured and recorded in Step 1D(28).

(45) On L1 door, adjust shims under lower forward door side roller as determined and recorded in Step 1D(30).

(46) Adjust lower ramp as determined and recorded in Step 1D(27).

NOTE: If ramp adjustment is not possible, ramp slots may be extended up to 0.08 inch, provided the maximum slot length does not exceed 0.52 inch. Bare metal resulting from rework should be treated with an Iridite solution.

(47) Install shims under forward lower track stop bumper as measured and recorded in Step 1D(20) less 0.25 (±0.010) inch.

(48) Lower door to dimension C using manual drive.

(49) Verify adjustments made in Step 1D(38). Use spring clips retained in Step 1D(2) to lock nuts in place.

(50) Lower door to closed position and verify that pressure stop bolts contact wear plates within specified limits (Ref. Fig. 501), and correct if necessary.

(51) Remove rigpin from actuator.

(52) Verify rigging adjustments of passenger entry shroud trap door (Ref. Para. 3).

NOTE: After any readjustment of passenger door, entry shroud trap door adjustment must be verified.

(53) Close circuit breakers opened in Step 1D(1)(c) (Ref. 52-12-00).

(54) Operate door to full open position and check dimensions between door and closest point on each of the forward and aft bumper assemblies. The clearance dimension must be within 0.15 inch of each other. If adjustment is necessary, up to three LS881-7, or equivalent, washers may be used on each bumper mounting screw to equalize the difference.

(55) Verify door operation (Ref. 52-12-00).

(56) Close door.

2. Adjustment/Test - Pressure Stop Bolt

A. General

This procedure outlines the adjustments necessary to adjust a single pressure stop bolt. The procedure may be used when there is a random pressure stop wear pad with no apparent contact mark from the pressure stop bolt.

B. Equipment and Materials

Shim Stock, 1.0 x 1.0 inch by 0.200 inch thick

C. Referenced Procedure

52-12-00, Door Actuation System - Adjustment and Test

D. Adjustment

(1) Open door far enough to gain access to pressure stop wear pad above out of adjustment stop bolt.

(2) Tape shim to wear pad of stop to be adjusted, using pressure sensitive (masking) tape.

(3) Tape shim to wear pad above and below stop to be adjusted.

NOTE: Tape must cover shim in area where stop bolt contacts shim.

(4) Lower door to position approximately 6 inches from closed position.

(5) Remove wire lock from bolt to be adjusted. Retain wire lock.

(6) Adjust stop bolt one-half revolution outboard (toward pressure stop).

CR CR (7) Manually crank door in closing direction until pressure stop bolts are against taped shims.

(8) Open door.

(9) Check tape covering three shims. Mark from stop bolt should be apparent on all stop pads. If mark does not appear on pad at adjusted bolt, repeat Steps 2D(6) through 2D(9). If mark does not appear at pads above and below adjusted bolt, rig door in accordance with Step 1.

(10) Install wire lock retained in Step 2D(5) to lock bolt in place.

NOTE: If wire lock cannot be inserted, back off bolt to next slot.

(11) With door open remove tape and shims from pressure stop pads.

(12) Close door.

3. Adjustment/Test - Passenger Entry Shroud Trap Door

A. General

This procedure outlines the rigging adjustments required at each passenger door entry trap door (flipper panel) assembly actuating linkage. Correct adjustment will enable each panel to operate smoothly with its respective passenger door. The procedure is applicable to each trap door.

B. Referenced Procedures

25-26-01, Ceiling Trim Drop Panels - Removal and Installation

25-26-08, Passenger Entry Shroud and Trim - Removal and Installation

52-12-00, Door Actuation System - Adjustment and Test

C. Trap Door Rigging Adjustments

(1) Verify that the following has been performed:

(a) Passenger door is properly rigged and operated to closed position using electrical power (Ref. 52-12-00).

(b) Passenger entry overhead shroud is installed (Ref. 25-26-08).

(c) Trap door brackets are installed in passenger door tracks.

(d) Ceiling panels inboard of entry, below path of passenger door travel, are removed (Ref. 25-26-01).

WARNING: SERIOUS INJURY CAN OCCUR IF PASSENGER DOOR IS OPERATED WHILE WORK IS BEING PERFORMED. TAG INNER AND OUTER DOOR HANDLES AND SWITCHES. REMOVE TAGS AFTER COMPLETION OF WORK.

(2) Center trap door over opening in shroud with overlap on all edges.

(3) Adjust height of guide roller using shim stock or washers under door guide roller bracket so that trap door rests flat on shroud and roller contacts trap door cam on shroud (Ref. Fig. 503 and 504).

(4) Loosen bolts holding sections of trap door bracket together (each end of door).

(5) Adjust serrated surfaces of bracket sections inboard/outboard and vertically to allow trap door to seat flush on shroud with a reasonable preload, as follows:

(a) At L1 and R1 doors, align slot in inboard section of bracket with rod end.

NOTE: Attachment bolt may be used as rigpin at rod end.

(b) At all doors except L1 and R1, align slot in inboard section of bracket with top hole in each angle bracket.

NOTE: Attachment pin may be used as rigpin to align holes.

CAUTION: VERIFY ENGAGEMENT OF SERRATED SURFACES BEFORE TIGHTENING BOLTS.

(6) Tighten bolts holding adjustable bracket serrated surfaces in place (each end of door).

(7) Determine number and position of spacers required at each rod end (or angle bracket) to change fore and aft position of door and keep trap door centered on shroud.

(8) Attach trap door bracket to trap door (each end of door) as follows:

(a) At L1 and R1 doors, use bolt, nut, and spacers as determined in Step 3C(7).

(b) At all doors except L1 and R1, use pin, new cotter pin and spacers as determined in Step 3C(7).

(9) Install springs. If spring tension lifts inboard edge of trap door more than 0.12 inch, readjust inboard/outboard bracket serrated plate inboard to force inboard edge down.

(10) Remove tags from passenger door controls.

(11) Manually open passenger door inboard and up (Ref. 52-12-00) until trap door is free of shroud and door guide roller is clear of trap door cam. Observe that trap door operates smoothly and that there is no interference.

(12) Adjust trap door rotation stops as follows:

(a) L1 and R1 trap door panels to be 63 degrees above horizontal.

(b) The remaining trap door panels to be parallel with door track within 0.06 inch.

(13) Check rotation of trap door to ensure free operation and repeatability of stopping angle.

(14) Slowly raise passenger door using hand crank and observe path of trap door. Verify that trap door clears all objects by 1.00 (+0.00, -0.62) inch through entire travel of passenger door from full up to full down. L1 and R1 doors must be checked at the same time.

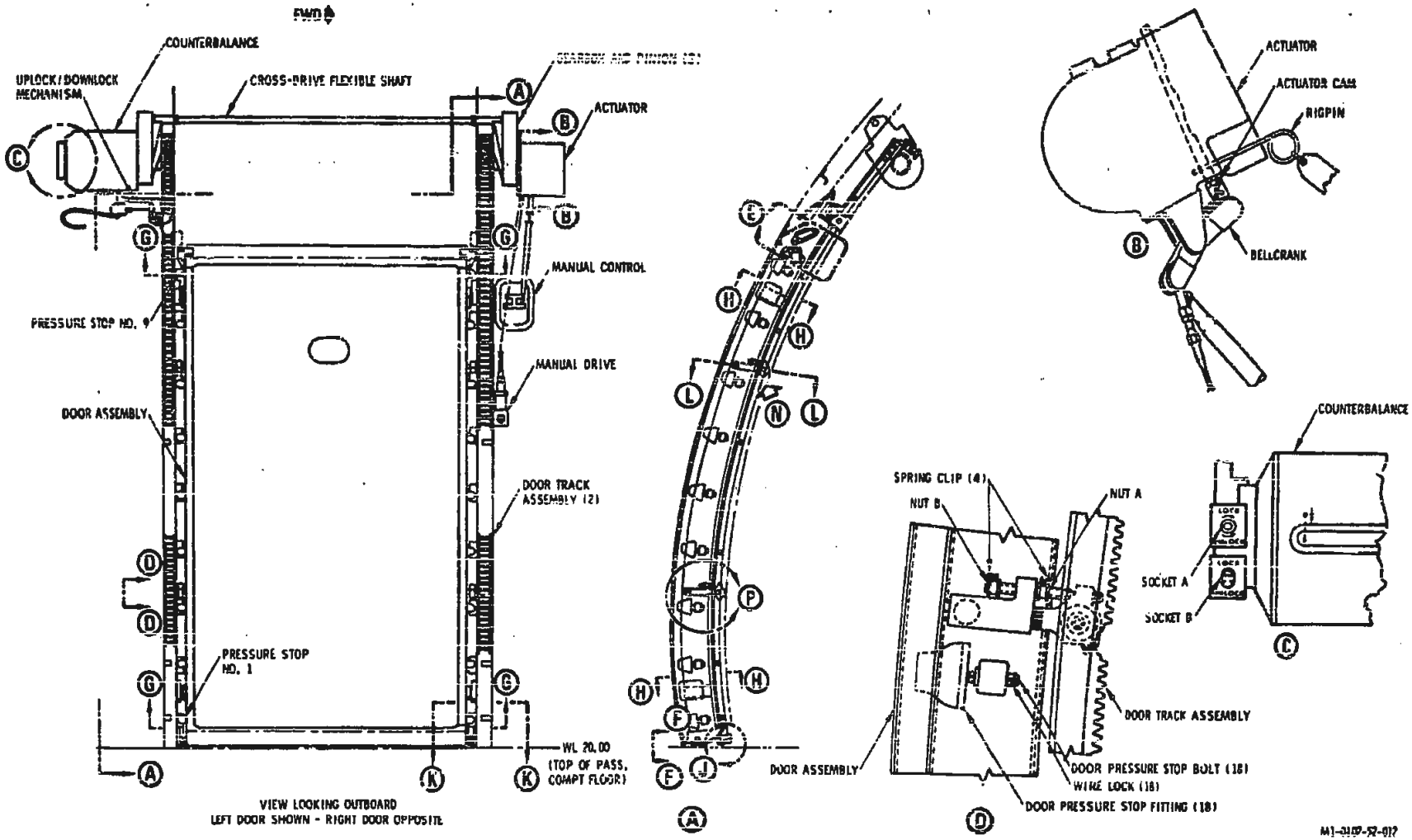
NOTE: If necessary to readjust trap door to increase or decrease distance between trap door and

inside of fuselage skin, change length of support brackets. This requires resetting of both inboard/outboard and vertical adjustments on the brackets to ensure proper closing, and may require re-adjusting rotation stops. After any readjustment, repeat Steps (12) through (14).

(15) Operate passenger door in electrical and emergency modes to verify operation of trap door.

(16) Check all adjustments and stop bolts for tightness, and bracket serrations for alignment. Torque 1/4-inch bolts 30 to 65 pound-inches and apply paint stripe so that alteration of applied torque will be indicated by stripe misalignment.

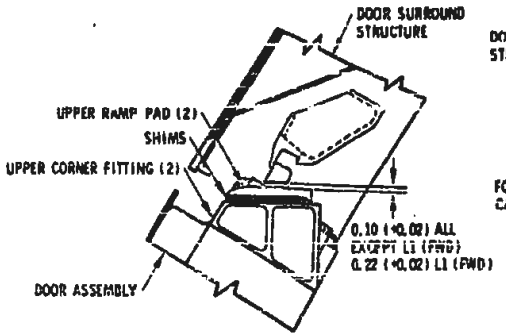
(17) Install ceiling trim panels (Ref. 25-26-01).



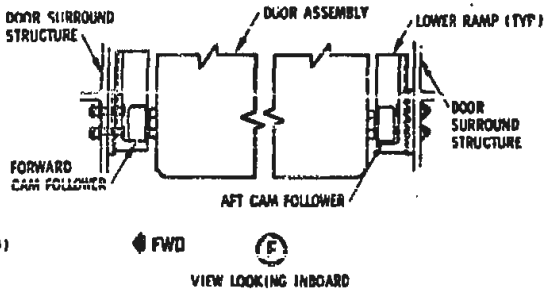
Passenger Door Rigging Adjustments
Figure 501 (Sheet 1)

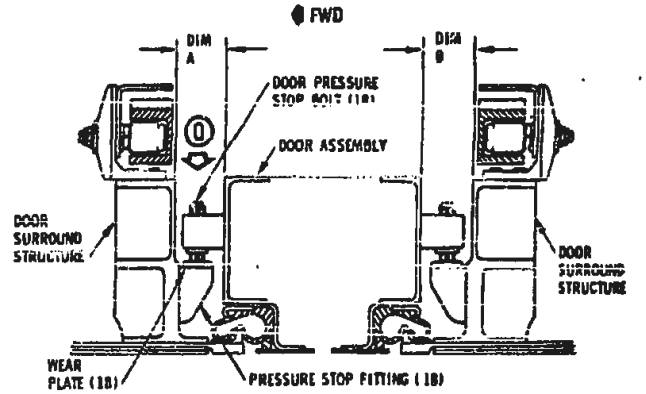
EFFECTIVITY: ALL

001B

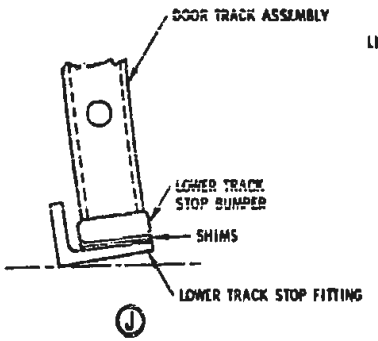


(E)

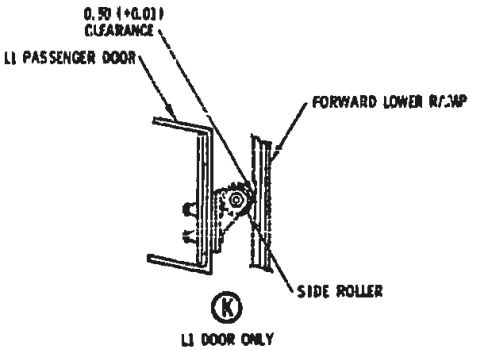




(G)

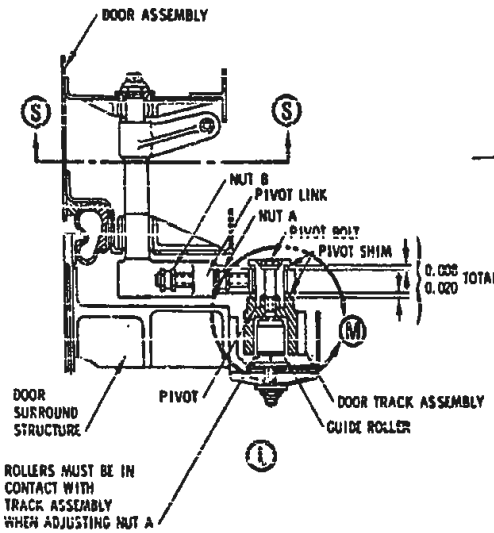


(J)

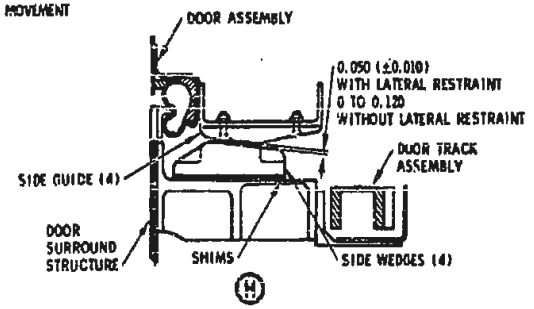


(K)
L1 DOOR ONLY

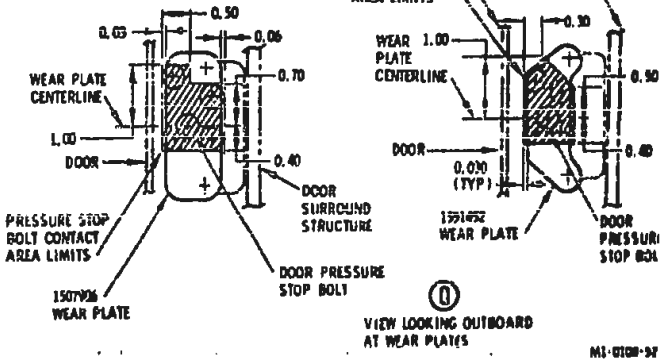
NOTE
ALL DIMENSIONS IN INCHES EXCEPT AS NOTED



(L)



(H)

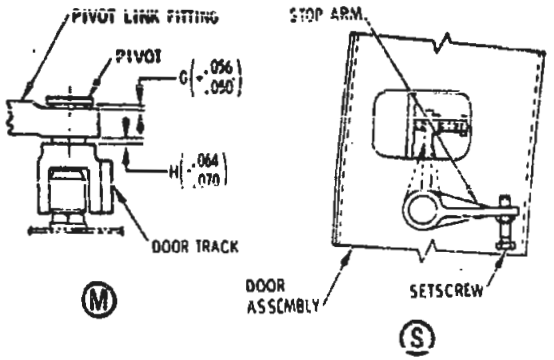


(Q)
VIEW LOOKING OUTBOARD AT WEAR PLATES

M1-0108-97

R
R Passenger Door Rigging Adjustments
Figure 501 (Sheet 2)

R EFFECTIVITY: ALL
R
001B



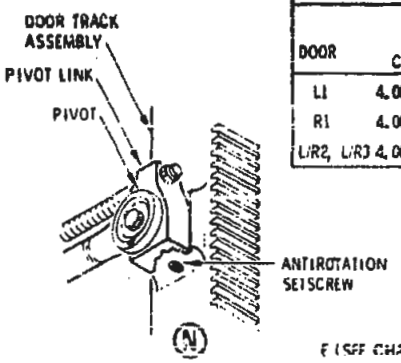
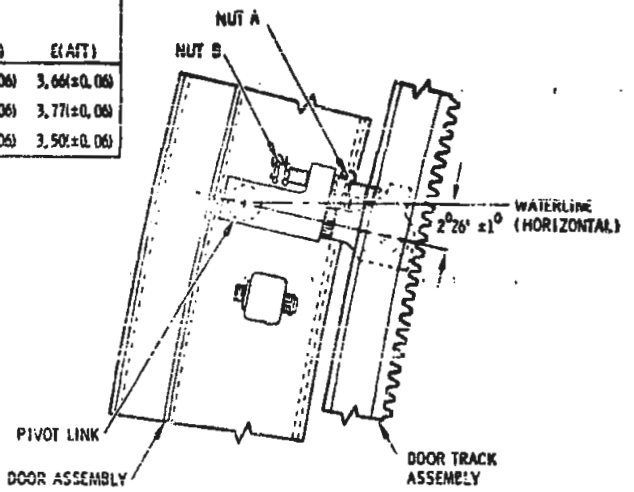
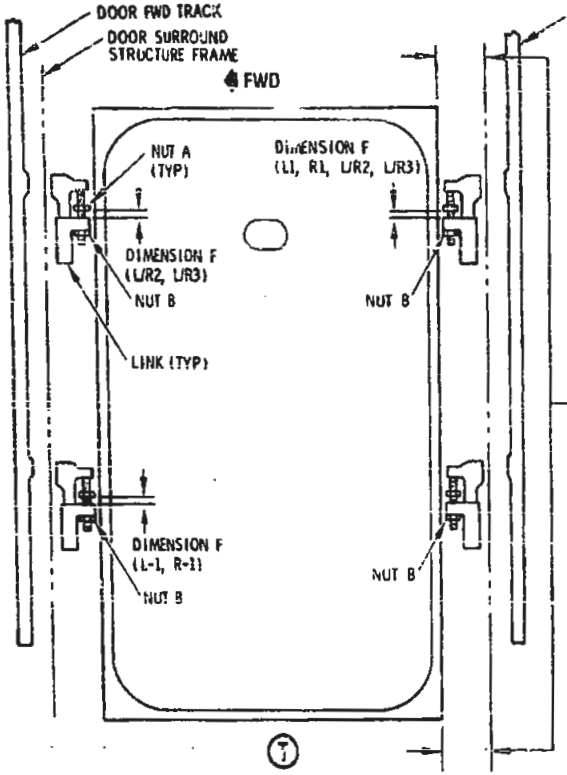
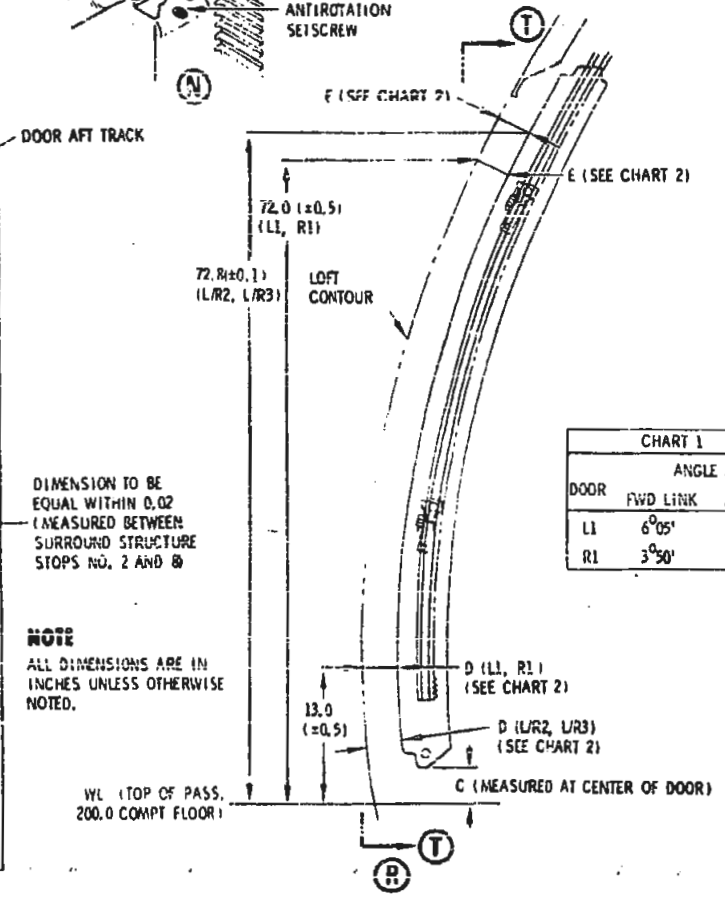


CHART 2

DOOR	DIMENSION C	D(FWD)	D(AFT)	E(FWD)	E(AFT)
L1	4.0(±0.5)	3.34(±0.06)	3.42(±0.06)	3.64(±0.06)	3.66(±0.06)
R1	4.0(±0.5)	4.17(±0.06)	4.18(±0.06)	3.72(±0.06)	3.77(±0.06)
L/R2, L/R3	4.0(±0.1)	3.50(±0.06)	3.50(±0.06)	3.50(±0.06)	3.50(±0.06)







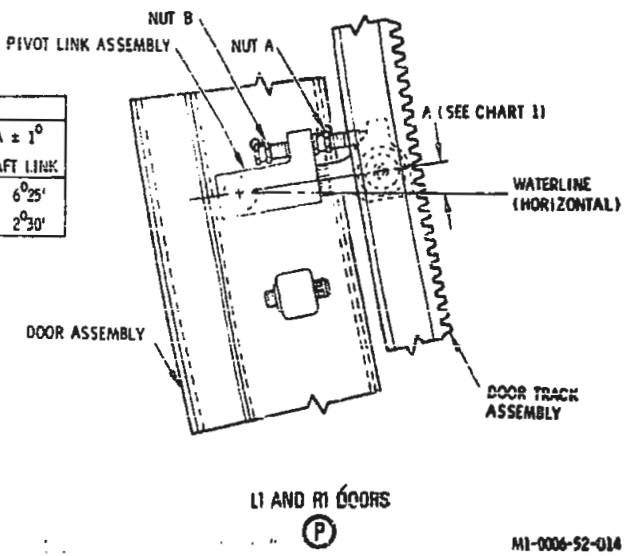
DIMENSION TO BE EQUAL WITHIN 0.02 (MEASURED BETWEEN SURROUND STRUCTURE STOPS NO. 2 AND 8

NOTE

ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE NOTED.

CHART 1

DOOR	ANGLE A ± 1° FWD LINK	AFT LINK
L1	6°05'	6°25'
R1	3°50'	2°30'

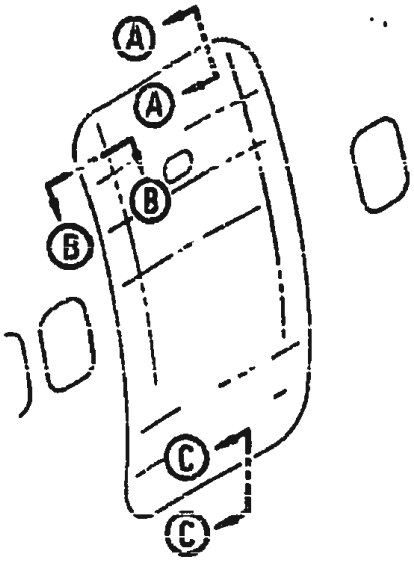


M1-0006-52-014

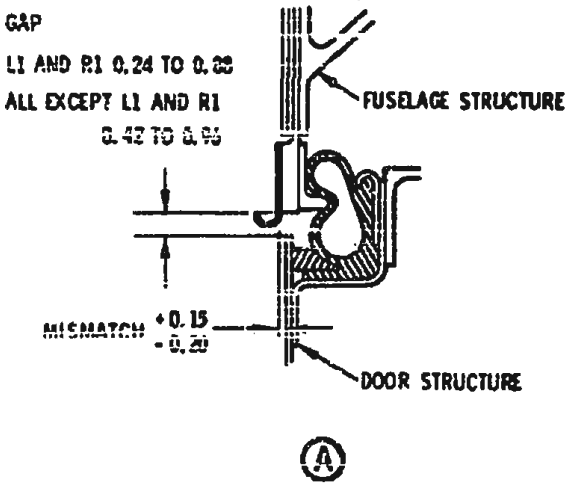
R Passenger Door Rigging Adjustments
R Figure 501 (Sheet 3)

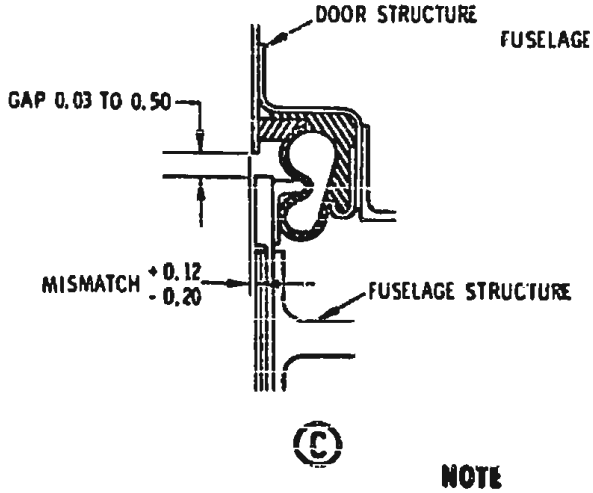
EFFECTIVITY: ALL

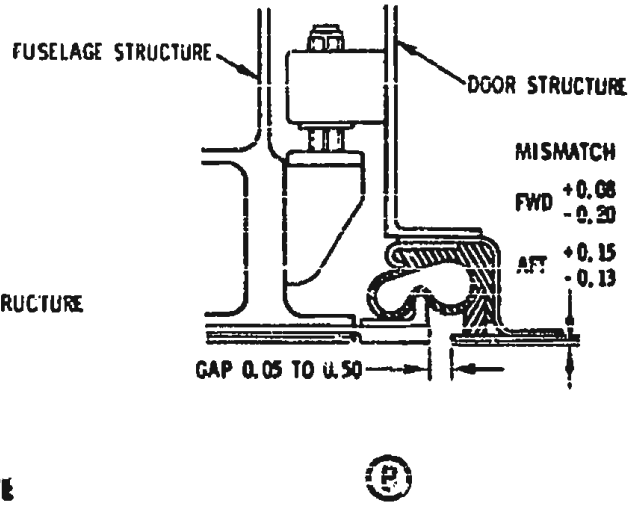
001B



(SMOOTHNESS AND GAPS
TYPICAL ALL PASSENGER DOORS)







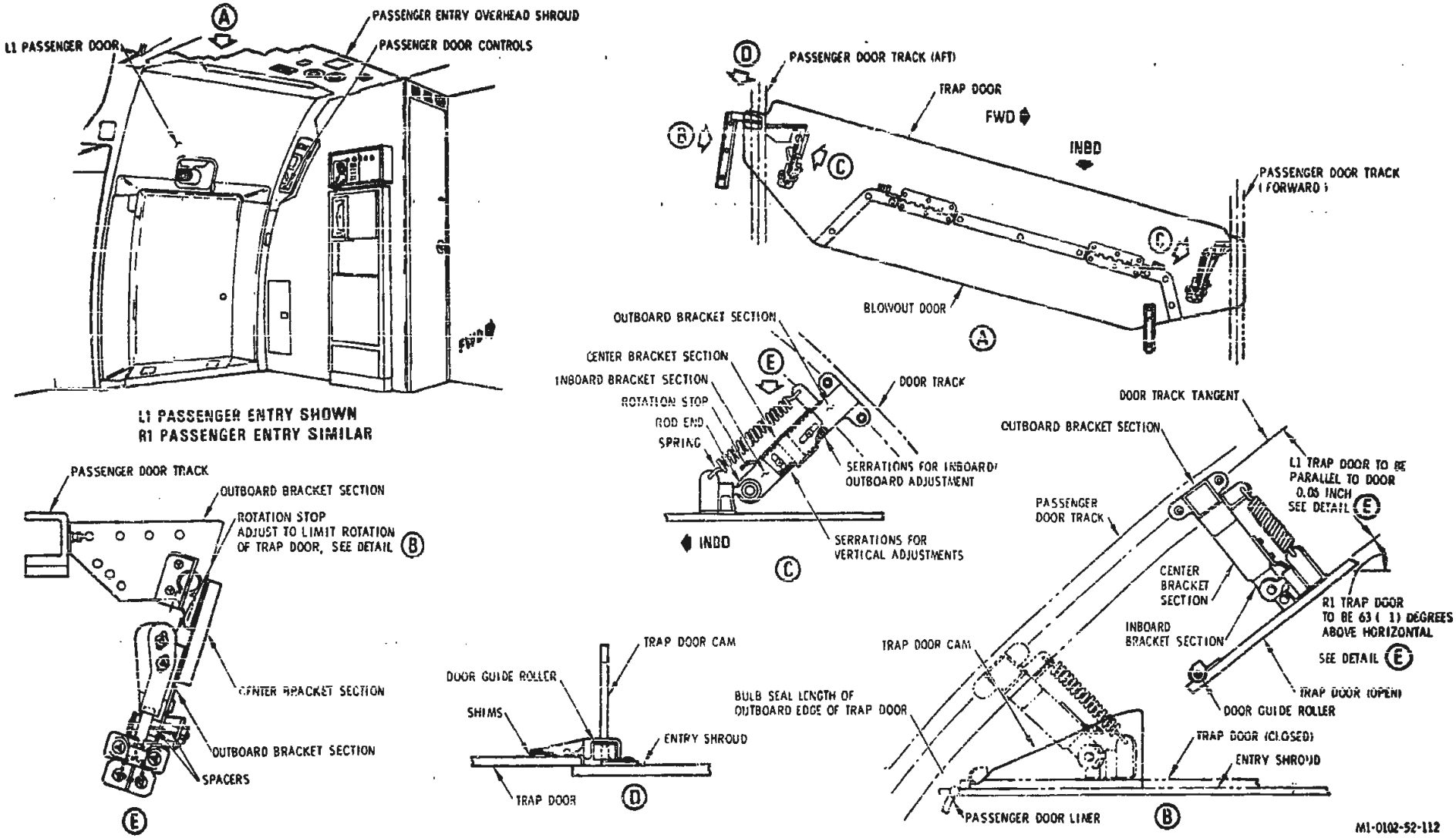
NOTE
ALL DIMENSIONS IN INCHES
EXCEPT AS NOTED

M1-0105-52-041

RR Passenger Door Smoothness and Gaps
Figure 502

EFFECTIVITY: ALL

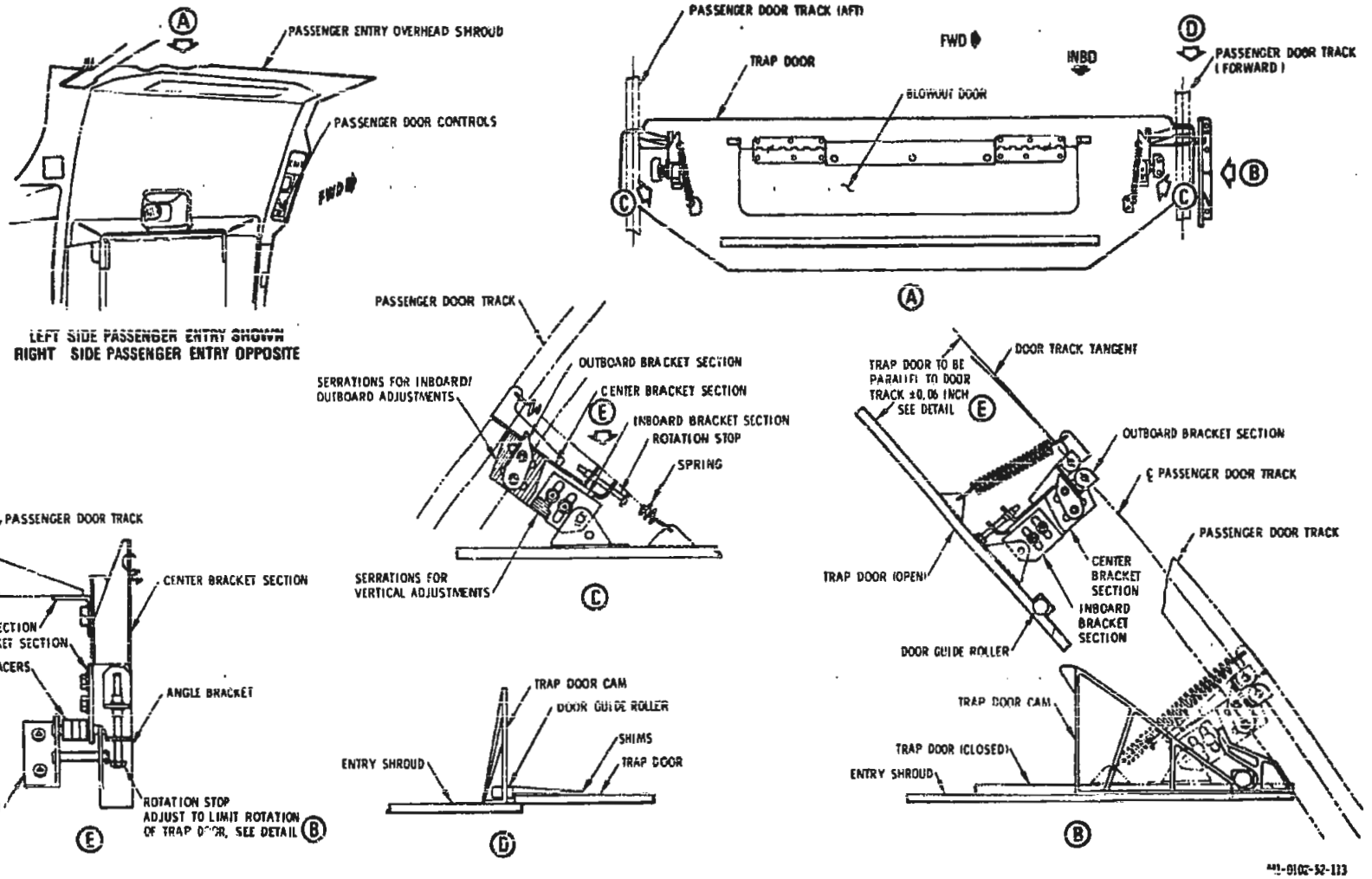
0018



Trap Door (L1 and R1 Entry) Rigging Adjustments
Figure 503

EFFECTIVITY: ALL

001B



Trap Door (All doors except L1 and R1) Rigging Adjustments
Figure 504

R
0018 EFFECTIVITY: ALL

PASSENGER DOOR SEAL - REMOVAL AND INSTALLATION

1. General

This procedure is applicable to all of the passenger door seals.

2. Equipment and Materials

Pry Bar

NOTE: The tool must be made of either wood or plastic and should have a tapered wedge-shaped end with blunt edges.

3. Referenced Procedure

52-12-00 Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) If door is installed in aircraft, open enough to gain access to seal.

(2) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breakers PASS DOOR ACTUATOR and PASS DOOR CONTROL (Ref. 52-12-00, Adjustment and Test).

NOTE: To facilitate seal replacement, door may be removed.

(3) Insert pry bar between band seal retainer and door skin (Ref. Fig. 401) at bottom center of door.

(4) Pry band seal retainer clear of seal installation and remove from door.

(5) Disengage seal from seal retainer and remove from door.

B. Installation

(1) Verify that circuit breakers opened in Step 4A(1) are open and tagged and that door controls are tagged.

(2) Check that door seal, band seal retainer, and seal retainer are clean and free of grease.

(3) Place door seal on door with the word TOP at top of door facing outboard.

(4) Insert edge A of seal into seal retainer.

(5) Insert remainder of seal into seal retainer without stretching or twisting seal.

NOTE: As seal is inserted at top of door and down sides, door may be raised manually to allow better access to seal toward bottom of door.

(6) Install band seal with words LOCATE SPLICE ON BOTTOM OF DOOR at bottom of door. Do not twist band seal retainer. When the seal and seal retainer are properly installed the retainer vent holes may be seen by viewing between outboard surface of seal and inboard surface of door skin.

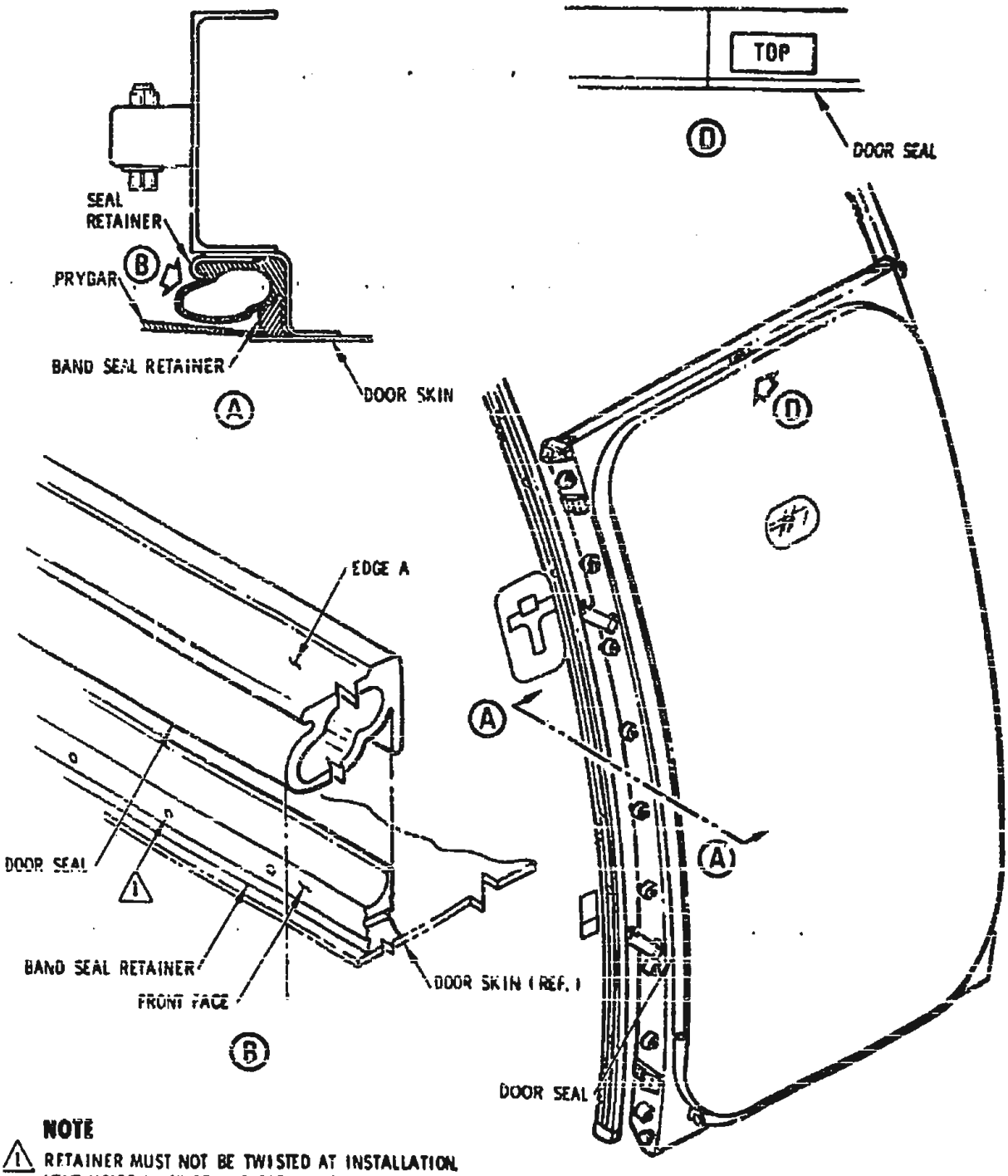
NOTE: Band seal to have slight preload stretch equally around periphery.

(7) Remove tags from electrical and manual door controls.

(8) Remove tags and close circuit breakers opened in Step 4A(1).

R (9) Operate door to close and open two times. When closed,
R check seal for distortion or bunching and correct if
R necessary.

R (10) When door is open, check that seal remains properly
R installed with seal retainer [Ref. Step 4B(6)], and
R seal is free of obvious scrubbing action or wrinkles.



NOTE

1 RETAINER MUST NOT BE TWISTED AT INSTALLATION. VENT HOLES MUST BE VISIBLE AT APPROXIMATE 3-INCH INTERVALS

M1-0101-52-042

R R Passenger Door Seal - Removal and Installation
Figure 401

R

PASSENGER DOOR SEAL - APPROVED REPAIRS

R 1. General

R In the event that a door seal is accidentally damaged, an
R appropriate repair can be made. The type of repair will depend
R on the degree of damage.

R The seal requires inflation by cabin air pressurization to force
R the seal into firm contact with the seal striker surrounding the
R door.

R Tear damage on the seal bulb area of a seal will prevent the
R seal from inflating and can result in failure of the seal to
R maintain cabin pressure.

R Replacement of a damaged seal with a new seal is preferable,
R however, seals may be repaired if careful attention to detail is
R exercised, and repair allowed to cure for at lease eight hours.

R The repairs described may be used at any passenger door
R location.

R 2. Equipment and Materials

R Knife or scissors

R Spatula or putty knife

R Solvent, Methyl-Ethyl-Ketone (MEK), Federal Specification
R TT-M-261, or 1,1,1 Trichloroethane, Fed Spec. MIL-T-81533A
R Technical Inhibited (Methyl Chloroform), Dow Chemical Co.,
R Chlorothene VG, or equivalent

R Wiping cloths (cotton), clean-dry, oil-free

R Silicone Adhesive-Sealant, General Electric Co., RTV-157

R Fabric, Dacron Weave, Pattern D-400, Mohawk Fabrics, 96 Gay Park
R Avenue, Amsterdam, N.Y., 12010, or equivalent

R Solution of 50 percent liquid soap and water

R Door seal material salvaged from damaged seal, as required

R Pry Bar

NOTE: The tool should have a tapered wedge-shaped end with blunt edges and must be made of wood or plastic. Do not use metal tools.

3. Referenced Procedures

R 52-11-52 Door Seal - Removal and Installation

4. Approved Repairs

A. Minor Repair

Cuts or tears which do not extend into the seal foot area may be repaired as follows:

(1) Using a blunt pry bar remove band seal retainer in the area to be repaired.

CAUTION: DO NOT ALLOW SOLVENT TO SOAK INTO SEAL.

(2) Thoroughly clean torn, cut, or abraded area at least one inch beyond each end of seal repair (Ref. Fig. 801). Use clean cloth dampened with solvent. Wipe dry with clean dry cloth before solvent evaporates.

(3) Cut to size, a piece of Dacron fabric, a minimum of three inches long, and extending at least one inch beyond each end of seal repair area. Trim Dacron fabric to cover seal bulb from seal retainer to seal skirt (Ref. Fig. 801, View A-A).

(4) Using solvent, clean side of fabric to be bonded to seal as described in Step 4A(2).

(5) Apply a continuous coat of adhesive - Sealant RTV-157, approximately 0.010-inch thick, over entire area of seal to be covered with Dacron reinforcement fabric. Also apply adhesive into cut or torn edges of seal damage area.

(6) Align Dacron fabric over repair area and firmly press fabric onto adhesive carefully to avoid wrinkles or distortion of seal shape. The adhesive which extrudes at edge of fabric must be smoothly faired along edge of fabric to contour with seal.

(7) Apply a thin coat of adhesive over the Dacron fabric. Smooth adhesive over entire repair with finger wetted with solution of 50 percent liquid soap and water.

CAUTION: THE MINIMUM CURING TIME IS EIGHT HOURS. THE MINIMUM CURING TEMPERATURE IS 70 DEGREES F.

NOTE: Silicone adhesives cure most rapidly in a humid atmosphere and moderate temperature conditions. Heat lamps are not recommended, as excessive heat may cause gelling of adhesive (a condition in which cure will not occur).

(8) Reinstall band seal retainer after adhesive has cured, or isolate retainer from repair adhesive by interposing a piece of wax paper or mylar film between retainer and uncured repair adhesive.

R (9) Operate door and check seal for proper installation as described in 52-11-52, Removal and Installation, Steps 4B(9) and 4B(10).

D. Major Repair

A cut or tear extending into or through the seal foot area, and not involving loss of seal material, requires a fabric reinforcement splice extending completely around the seal.

The seal configuration is such that to perform properly its shape must be carefully maintained. Completed splices must be neat, smooth, and wrinkle-free, without surface imperfections to prevent air leakage, and to permit proper installation of the seal, and band seal retainer.

The following repair can be performed to join a severed seal, or to splice in a section of seal to replace a damaged section.

(1) Remove passenger door seal (Ref. 52-11-52, Removal and Installation).

(2) Mark extent of damaged seal to be removed.

NOTE: Remove enough seal material to permit clean cuts across undamaged areas of seal.

(3) Cut a section of replacement seal from undamaged section of seal having the same cross-section of seal being replaced. Replacement seal section should be at least as long as area marked in Step 4B(2).

(4) Lay replacement section of seal over seal damage area and mark seal area to be removed using edge of replacement seal for guide.

R (5) Remove damaged section of seal by making a smooth butt cut on each side of damage. Butt ends of replacement seal must accurately fit together with butt ends of seal being repaired.

R CAUTION: DO NOT ALLOW SOLVENT TO SOAK INTO SEAL.

R (6) Throughly clean seal repair area as described in Step 4A(2).

R (7) For each splice, cut to size a piece of Dacron fabric a minimum of three inches long and extending at least one inch beyond each end of repair splice. Trim Dacron fabric as required to wrap completely around seal bulb and foot with enough fabric to overlap as shown (Ref. Fig. 801, View B-B).

R (8) Using solvent, clean side of Dacron fabric to be bonded to seal, as described in Step 4A(2).

R (9) Apply a continuous coat of adhesive-sealant RTV-157, approximately 0.010 inch thick, over entire area of seal to be covered with Dacron reinforcement fabric. Also apply adhesive to interfacing edges of seal.

R (10) Butt damaged seal edges together, making sure that original alignment, length and contour are maintained.

R (11) Firmly press fabric on adhesive surface and carefully smooth out wrinkles. Wrap fabric carefully around seal to maintain original contour. Overlap fabric as shown (Ref. Fig. 801, View B-B).

R (12) Apply a thin coat of adhesive, as required, to completely cover seal repair. Smoothing of adhesive and wrinkles can best be accomplished with finger wetted with a solution of 50 percent liquid soap and water. Adhesive which extrudes at edge of fabric must be smoothly faired along edge of fabric to contour with seal.

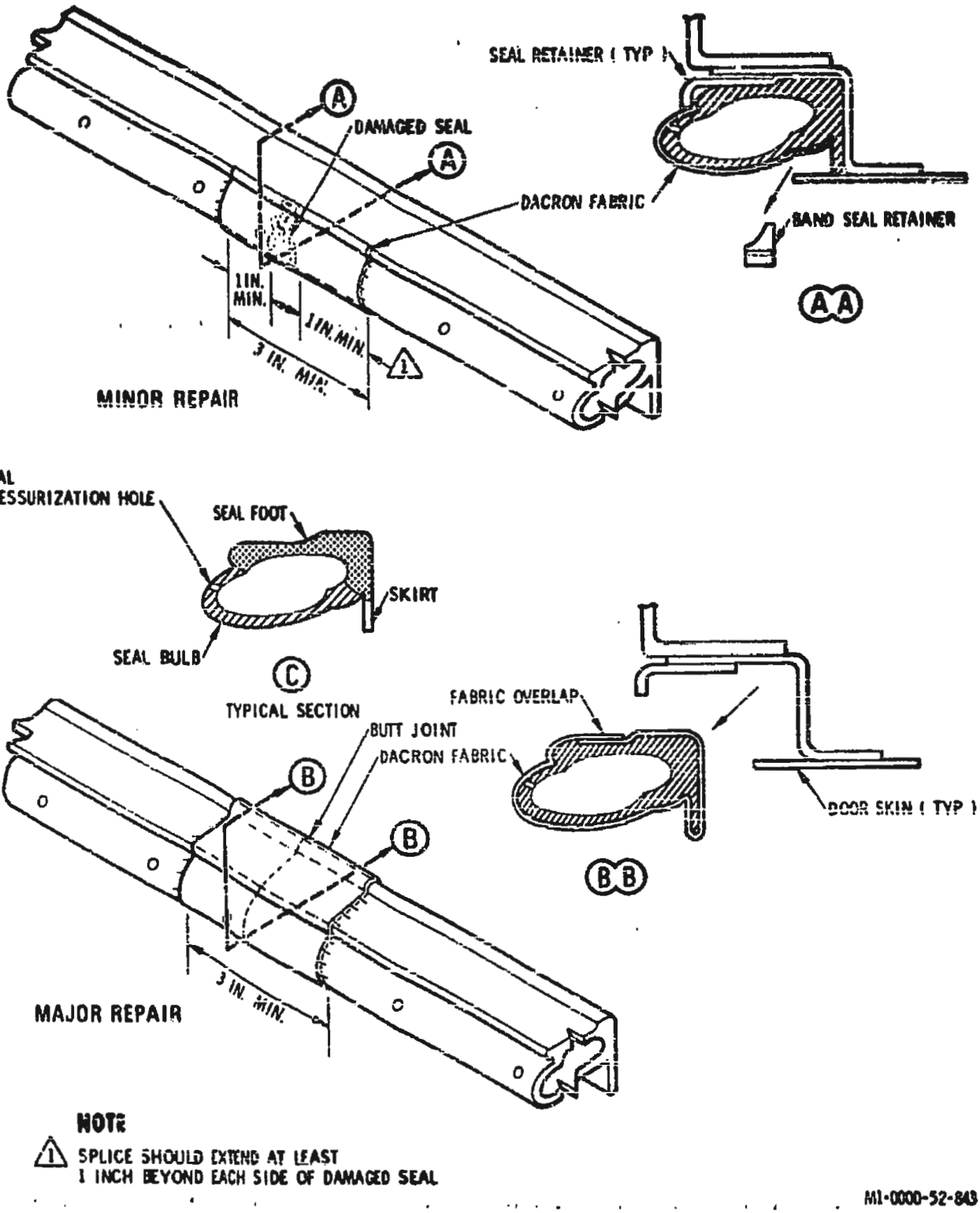
R CAUTION: THE MINIMUM CURING TIME IS EIGHT HOURS. THE MINIMUM CURING TEMPERATURE IS 70 DEGREES F.

R (13) Allow seal repair to cure, without being moved, for at lease eight hours at room temperatures above 70 degrees Fahrenheit.

R CAUTION: VERIFY THAT RTV 157-SEALANT IS COMPLETELY CURED BEFORE REINSTALLING SEAL.

R (14) Reinstall seal (Ref. 52-11-52).

R (15) Operate door and check seal for proper installation as
R described in 52-11-52, Adjustment and Test, Steps 4B(9)
R and 4B(10).



NOTE:

1 SPLICE SHOULD EXTEND AT LEAST 1 INCH BEYOND EACH SIDE OF DAMAGED SEAL

M1-0000-52-843

Cabin Door Seal Repairs - Approved Repairs
Figure 801

PASSENGER DOOR ACTUATION SYSTEM - DESCRIPTION AND OPERATION

1. General

Each passenger door has three modes of operation. The modes are designated electrical, manual, and emergency. The passenger door actuation system consists of electrical and mechanical components (Ref. Fig. 1).

A. Electrical Mode

Each passenger door can be operated electrically from inside or outside the aircraft. An electrical actuator is mounted at the forward top corner of the door opening and a counterbalance is mounted at the aft top corner. Cross-drive gearboxes are mounted on the actuator and the counterbalance. The gearboxes are interconnected by a flexible cross-drive shaft so that rotation in the actuator gearbox causes rotation in the counterbalance gearbox. Each gearbox has a door-track pinion that engages the door track. Operation of the electrical actuator causes the actuator gearbox and counterbalance gearbox door track pinions to rotate which in turn drive the door open or closed.

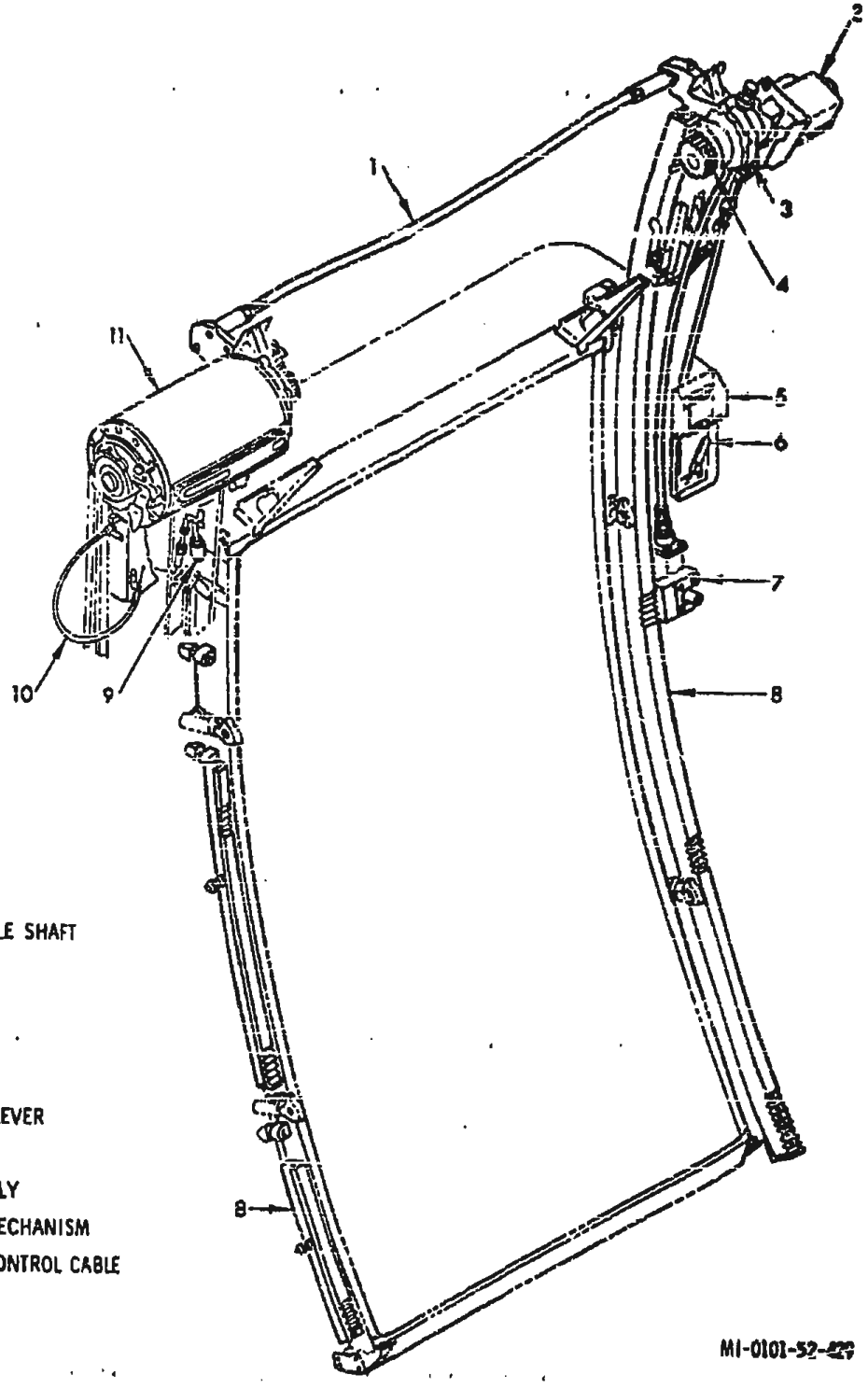
The inside door control switches are located on the evacuation slide engage/detach panel below the selector lever. The outside control switch is located forward of the door at WL 250.

B. Manual Mode

In the event of electrical actuator failure, or unavailability of electrical power, each passenger door can be driven open or closed from inside the aircraft using a speed wrench. The forward left (L1) door can also be driven open or closed manually from outside the aircraft. The manual system consists of an angle drive and flexible shaft which connects to the electrical actuator cross-drive gearbox. Using a speed wrench to actuate the angle drive causes the flexible shaft to rotate the actuator and counterbalance gearboxes and door track pinions which drive the door open or closed.

C. Emergency Mode

In the event of an emergency, all passenger doors can be opened from inside or outside the aircraft by operating the emergency PULL DOWN (tee) handle. The emergency actuation system consists of the handle assembly, linkage, a control cable, and a preloaded counterbalance. When either the



1 CROSS DRIVE FLEXIBLE SHAFT
2 ACTUATOR
3 GEARBOX (2)
4 PINION GEAR (2)
5 MANUAL CONTROL
6 GIRT BAR SELECTOR LEVER
7 ANGLE DRIVE
8 DOOR TRACK ASSEMBLY
9 UPLOCK/DOWNLOCK MECHANISM
10 UPLOCK/DOWNLOCK CONTROL CABLE
11 COUNTERBALANCE

R
R

Passenger Door Actuation System
Figure 1

inside or outside handle is pulled full travel, the preload force in the counterbalance is released causing rotation of the counterbalance and actuator gearboxes and door track pinions which drive the door open.

The counterbalance is preloaded when the door is moved to the closed position. The preload force also assists in opening the door during electrical and manual operation.

During emergency operation, the evacuation slide will deploy as the door opens only when the inside PULL DOWN handle is pulled full travel with the evacuation slide girt bar engaged. The evacuation slide will not deploy at anytime when the outside handle is pulled or when the inside handle is pulled with the evacuation slide girt bar detached.

2. Operation

The doors are normally operated in the electrical mode from either inside or outside the aircraft.

The L1 door is the only door which can be operated manually from both inside or outside the aircraft. All other passenger doors can be operated manually only from inside the aircraft.

All passenger doors can be opened from either inside or outside the aircraft in the event of an emergency. This system is not designed to be used to open the doors for normal access or egress. During normal operations only the electrical and manual modes are to be used.

A. Electrical Mode

To operate the door electrically, the aircraft must be on the ground with the air/ground sensing relay (Ref. 32-63-00) energized. Electrical power being supplied from either an operating engine, APU or Ground Power Unit.

(1) Opening Door from Inside Aircraft Electrically

The door can be opened electrically from inside the aircraft by placing the evacuation slide selector lever in the DETACH position and holding the DOOR OPEN switch in the depressed position (Ref. 52-12-00, Fault Isolation, SCHEM 1, SCHEM 2 and SCHEM 3).

(2) Opening Door from Outside Aircraft Electrically

CR NOTE: Normal opening procedure from outside.

C (a) Release cover over control switch and activate
C switch up and hold in up position. If door does
C not open electrically, perform Step 2.

C (b) Release latch at T-handle, hold control switch up
C and then slowly pull T-handle down until door
C starts to open electrically. Hold T-handle steady
C and hold control switch up until door stops
C automatically. When fully open then push up and
C latch T-handle and release control switch. Close
C and latch cover over control switch and perform
C Step 3.

C (c) At T-handle inside cabin, push in on handle to
C ensure it is fully stowed.

C CAUTION: DO NOT MOVE T-HANDLE BEYOND THE POINT THE
C DOOR ELECTRICALLY OPERATES. MOVING THE
C T-HANDLE TOO FAR WILL CAUSE AN EMERGENCY
C OPENING OF THE DOOR AND DAMAGE TO THE
C AIRCRAFT DOOR STRUCTURE MAY OCCUR.

The door can be opened electrically from outside the aircraft by actuating the outside door control switch only if the evacuation slide selector lever is in the DETACH position. The evacuation slide selector lever can be moved to the DETACH position from outside the aircraft by placing the outside emergency handle to the first detent position.

(3) Operation During Electrical Opening

With the evacuation slide selector lever in the DETACH position, holding either the inside or outside DOOR
R OPEN switch in the closed position energizes the
R time-delay relay and 28V dc is applied to the
R uplock/downlock solenoid. The solenoid withdraws the
R lock pin from the path of the door track. When the
R lock pin is fully retracted, the limit switch is
R actuated and the electric door-open circuit to the
R actuator is completed. The actuator drives the two
R gearboxes and door-track pinions in the reverse
R direction which move the door tracks and door upward. Output from each gearbox rotates the door-track pinions which are in contact with the gear surface of the door tracks. Rotation of the door-track pinions causes the door tracks to move upward.

As the door tracks move upward, the door swings inboard on the door links to clear the door opening and then is carried upward and overhead on the track and roller arrangement. At the fully open position, the door open

limit switch is actuated to open the electric circuit to the actuator. When the actuator stops the motor brake is released. The brake will hold the door at any intermediate position.

When the door is in the fully open position, the DOOR OPEN switch is released. The time-delay relay maintains power to the uplock/downlock solenoid for 3 seconds after the switch is released to preclude jamming of the lock mechanism. After 3 seconds, the uplock/downlock solenoid is deenergized to allow the spring-loaded lock pin to extend under the lower end of the door track to lock the door in the up position. If the DOOR OPEN switch is released at an intermediate position the door will be held in that position by the motor brake, after 3 seconds, the spring-loaded lock pin will extend to the side of the aft track.

R During door opening, the electrical actuator is powered
R and acts as a special limiter for the counterbalance
R whose spring preload force opens the door.

On passenger door actuators with SB 52-066 incorporated, actuators PN 672013-113; 119, or 121, are updated to PN 672013-123, -125, or -127 configurations for increased door actuation system reliability. Actuator improvements include a new rotor shaft and brake hub, new configuration first and second stage reduction gears, addition of a new ac/dc intertie relay, and run-in of the actuator clutch before adjustment. The added relay prevents inadvertent release of the door actuator brake when ac power to the actuator is interrupted.

CAUTION: DOOR OPERATION IS LIMITED TO FIVE COMPLETE OPEN/CLOSE CYCLES WITHOUT EVACUATION SLIDE ATTACHED, OR TO TEN OPEN/CLOSE CYCLES WITH EVACUATION SLIDE ATTACHED, FOLLOWED BY AN ACTUATOR COOLING PERIOD OF FIVE MINUTES BEFORE RECYCLING THE DOOR.

(4) Closing Door from Inside Aircraft Electrically

The door can be closed electrically from inside the aircraft by placing the evacuation slide selector lever in the ENGAGE position and holding the inside DOOR CLOSE switch in the depressed position.

(5) Closing Door from Outside Aircraft Electrically

The door can be closed electrically from outside the aircraft by first placing the evacuation slide selector

lever, inside the aircraft, in the ENGAGE position and then holding the outside door control switch in the DOOR CLOSE position.

(6) Operation During Electrical Closing

With the evacuation slide selector lever in the ENGAGE position, depressing the inside DOOR CLOSE switch or holding the outside door control switch in the DOOR CLOSE position energizes the time-delay relay and 28V dc is applied to the uplock/downlock solenoid. The solenoid withdraws the lock pin from the path of the door track. When the lock pin is fully retracted, the limit switch is actuated and the electric door-close circuit to the actuator is completed. The actuator drives the two gearboxes and door-track pinions in the reverse direction which move the door tracks and door downward. As the door approaches the closed position, a cam follower on each side of the door engages a ramp at the lower side of the door opening causing the door to swing outboard into the door opening. The side guides, wear plates, and ramps center the door in the door opening and the door seats on the door stops.

When the door is in the closed position the DOOR CLOSE switch is released. The time-delay relay maintains power to the solenoid for 3 seconds before deenergizing the solenoid which allows the spring-loaded lock pin to move into the hole in the door track locking the door in the closed position.

R Two means of locking the door down are provided. The
R electro-mechanical brake in the actuator is the primary
R holddown device for the door. The solenoid operated
R lockpin is the secondary holddown device. The lockpin
R should not ordinarily touch the pin hole in the door
R track unless the actuator brake slips or door is
R misrigged.

B. Manual Mode

All passenger doors can be manually opened and closed from inside the aircraft. The L1 door can also be manually opened and closed from outside the aircraft.

C Manual opening and closing is accomplished by turning the
C manual angle drive with a manual drive speed wrench, (Ref.
C Emergency Equipment Diagram for location of speed wrench storage).

(1) Manually Open/Close Door from Inside Aircraft

NOTE: Because of a 3-way angle gearbox in the L1 door mechanism, rotation of the manual drive speed wrench is opposite from that of the other left hand doors.

Prior to opening the door from inside the aircraft using the speed wrench, the evacuation selector lever must be placed in the DETACH position and the inner PULL DOWN (tee) handle placed at the first detent. When the door is fully open, the tee handle is placed in the stowed position to lock the door.

Prior to closing the door, the selector lever must be placed in the ENGAGE position and the PULL DOWN handle placed at the first detent. After cranking the door 1/3 toward the closed position, the tee handle is placed in the stowed position. The door is then cranked to the fully closed position to close and lock the door.

Approximately 200 turns of the speed wrench are required to open or close a passenger door.

NOTE: If the door is inadvertently closed with the evacuation slide selector lever in the DETACH position, the door must be raised approximately 18 inches and the emergency slide girt bar retainer fittings inspected for damage prior to closing the door with the slide selector lever in the ENGAGE position.

Moving the evacuation selector lever to the DETACH position permits the evacuation slide girt bar to detach from the floor fittings. Placing the inside PULL DOWN handle at the first detent retracts the lock pin which allows the door track to be moved. Moving the evacuation slide selector lever to the ENGAGE position permits the evacuation slide girt bar to engage the floor fittings as the door closes. Placing the inside PULL DOWN handle to the stowed position allows the spring loaded lock pin to extend locking the door in either the fully open or fully closed position.

(2) Manually Open/Close L1 Door from Outside Aircraft

To open the L1 door from outside the aircraft, using the speed wrench, the outside PULL DOWN handle must be placed at the second detent. Approximately 200 turns of the speed wrench are required to open the door. When the door is fully open, the outside and inside PULL DOWN (tee) handles must be stowed to lock the door in the open position.

Placing the outside tee handle at the first detent moves the evacuation slide selector lever to the DETACH position. Movement of the outside tee handle to the second detent retracts the lock pin from the door track and moves the inside tee handle to the first detent. The door can then be opened by operating the speed wrench in the manual angle drive. When the door is in the fully open position the outside and inside tee handles must be pushed to the stowed position to allow the lock pin to extend and lock the door in the open position.

To close the L1 door from outside the aircraft, using the speed wrench, the evacuation slide selector lever must be in the ENGAGE position and the inside tee handle must be placed at the first detent. After approximately 67 turns of the speed wrench, when the door is 1/3 closed, the inside tee handle must be moved to the stowed position. Approximately 133 additional turns of the speed wrench are required to close the door. When the door is fully closed, it will lock in the closed position.

Placing the inside PULL DOWN (tee) handle at the first detent retracts the lock pin from the path of the door track. Moving the evacuation slide selector lever to the ENGAGE position permits the evacuation slide girt bar to engage the floor fittings as the door closes. With the door partly closed, pushing the inside tee handle to the stowed position allows the spring loaded lock pin to extend when the door reaches the fully closed position, locking the door closed.

C. Emergency Mode

In an emergency, all passenger doors can be opened either from inside or outside the aircraft by operating the PULL DOWN (tee) handle assembly. The tee handle assembly consists of inside and outside tee handles, a control cable connected to the lock pin, and linkages connecting the inside and outside tee handles, the actuator clutch and the evacuation slide selector lever mechanism.

R CAUTION: WHEN USING EMERGENCY HANDLE TO OPEN DOOR, ALLOW
R DOOR TO GO FULL OPEN. STOPPING DOOR AT
R INTERMEDIATE POSITION CAN CAUSE PREMATURE FAILURE
R OF DOOR ACTUATOR.

If the door is opened by operating the outside tee handle, the handle moves through three detent positions. As the outside handle is pulled to the first detent the linkage disengages the girt bar by moving the evacuation slide

selector lever to the DETACH position. As the outside handle is pulled to the second detent the control cable unlocks the door by retracting the lock pin. As the outside handle is pulled to the third detent the linkage declutches the actuator and the door is driven open by the preloaded counterbalance through the forward and aft cross-drive gearboxes. The evacuation slide cannot be deployed through the use of the outside tee handle.

Operation of the outside tee handle to the second and third detent positions also moves the inside tee handle.

The inside tee handle has two detent positions which correspond to the second and third detent positions of the outside tee handle. Movement of the inside handle does not change the position of the girt bar latch or move the outside handle.

If the door is opened by operating the inside tee handle, the position of the evacuation slide selector lever determines whether or not the slide will be deployed (Ref. 25-61-00).

WARNING: OPERATION OF INSIDE PULL DOWN (TEE) HANDLE TO SECOND DETENT POSITION WILL DEPLOY EVACUATION SLIDE IF EVACUATION SLIDE SELECTOR LEVER IS IN ENGAGE POSITION.

With the evacuation selector lever in the ENGAGE position, as the inside tee handle is pulled downward, the door is unlocked, the actuator is declutched, the counterbalance drives the door open and the evacuation slide is deployed.

The evacuation slide will not deploy if the evacuation slide selector lever is in the DETACH position prior to pulling inside PULL handle.

3. Actuator

A. Description

The actuator unit consists of:

An electric motor with an electro-mechanical brake. The actuator brake serves as the door's primary holddown feature.

A gearbox with reduction gear stages

A manual input gear and speed and torque limiter assembly

A relay box assembly which contains relays, rectifiers, limit switches, and an electrical harness

The actuator can be driven in either direction by reversing relays.

Rotational speed and output torque of the actuator is controlled automatically by means of internal brakes and load-sensing Belleville springs.

The speed limiter controls door speed to approximately 2 feet per second with or without the emergency slide. Actuator torque is limited to 1500 (±150) pound-inches.

The actuator shaft is turned manually by turning the actuator manual input gear with a crank. Cranking rotates the output stage of the gearbox, which causes positive rotation of the actuator output shaft. The motor operates on 115/200V, 400-Hz, three-phase power. The control voltage is 28V dc.

The actuators are located above and at the forward end of each door, each actuator attached to a cross-drive gear gearbox.

4. Counterbalance

A. Description

The counterbalance assembly consists of 18 compression springs, mounted between movable supports which drive a free-rotating ball screw shaft. The outer cover is provided with calibration windows.

The counterbalance assembly stores mechanical energy by movement of the door to the closed position. The springs compress to an approximate potential of 1200-pound-inch torque. The position of the front spring support can be determined through a calibration window. When doors are actuated to the open position, the counterbalance imparts torque to the ball screw shaft and door actuation mechanism. One counterbalance is located above and aft of each door.

5. Cross-drive Gearbox

A. Description

Two cross-drive gearboxes are required for each door actuation system. The gearboxes are attached to fuselage structure above the doors with their drive ends facing each

other from positions fore and aft of each door. The gearboxes are located above each door with the counterbalance and actuator assemblies. The gearbox assembly comprises a multistage spur gear train in a housing with input and output shafts. The input drive end of each set of door gearboxes accepts the input drive shaft of the counterbalance on one gearbox and the input drive of the motor-driven actuator on the second gearbox.

Each gearbox output shaft supports a door-track pinion to move the door tracks up and down. The drive end of each gearbox is also fitted with an adapter connection to accomodate a flexible interconnect shaft. Each gearbox has three rollers that ride in the door track to oppose pinion gear forces.

6. Manual Three-way Angle Drive

A. Description

The manual three-way angle drive is located forward of the L1 passenger door, zone 220, at approximately WL 240. The angle drive comprises a 2 to 1 reducing, right-angle, spiral bevel gear arrangement in a housing with two inputs and one output drive. The two inputs are located so that the door can be operated from inside or outside the aircraft. The drive transmits mechanical forces to the actuator through the manual drive flexible shaft to operate the door.

A manual drive speed wrench assembly (Ref. 25-63-00) is furnished to operate the drive.

7. Manual Two-way Angle Drive

A. Description

The two-way manual drive is similar to the three-way drive described in Paragraph 6, except that it has only one input drive. The two-way drive is locateu forward of all passenger doors except L1 at approximately WL 240. One input drive is located so that the door can only be operated from inside the aircraft.

8. Door Control Circuit

A. Description

Each door control circuit includes:

Two inside control switches

An outside control switch

An evacuation slide selector lever

An uplock/downlock solenoid

An uplock/downlock retract limit switch

A door-open limit switch

A door-closed limit switch

An actuator

The two inside and the one outside door control switches are located forward of each door. The uplock/downlock solenoids and the uplock/downlock retract limit switches are in the aft rail of each door. The door full-open and full-closed limit switches are in the forward rail of each door.

9. Door Handle Assembly

A. Description

The door handle assembly is located forward of the door at WL 265. The mechanism can be operated from either inside or outside the aircraft.

The assembly is comprised of an inner and an outer PULL DOWN (tee) handle, an upper and a lower cover for the outer handle, a PUSH latch to release the outer handle, and linkage to unlock the door and declutch the actuator.

The outer tee handle is released by depressing the PUSH latch. As the handle is pulled down there are three detent positions. The first position disengages the girt bar, the second position withdraws the lock pin, and the third position declutches the actuator.

The inner PULL DOWN (tee) handle is covered by a transparent cover that must be removed to gain access to the handle. The handle has two detent positions. The first position withdraws the lock pin and the second position declutches the actuator.

R PASSENGER DOOR ACTUATION SYSTEM - FAULT ISOLATION

R 1. General

R The diagrams and schematics in this section can be used for fault isolation any time a fault is reported or suspected. The PREREQUISITES listed at the top of each fault isolation diagram must be satisfied prior to starting fault isolation. Uncommon abbreviations are defined on the using fault code diagram or schematic.

R If the flight crew reports a trouble using a fault code number, the code number can be found in the Fault Isolation Reference Table in the Chapter 52 Fault Code Index. The index specifies the exact maintenance manual section, fault isolation diagram, and block number on the diagram where the fault isolation procedure should start. Schematics are included at the end of the section to supplement the fault code diagrams or as an aid in isolating a problem not covered on the diagrams.

R Refer to the Maintenance Manual Introduction for a more detailed discussion of the Fault Isolation Reporting Method (FIRM) and use of fault isolation diagrams/schematics.

R 2. Fault Isolation/Identification

R Table 101 lists the fault isolation diagrams and schematics in this section.

FIGURE	TITLE
101	Component Location Index
102	Component Locator Diagram
103	Passenger Door Inoperative Electrically
104	Passenger Door Inoperative Manually (Handcrank) (Closing)
105	Passenger Door Inoperative Mechanically (Opening)
106	Passenger Door Air Leak
107	Passenger Door Opens Slowly, Mechanical Mode
SCHEM 1	L/R1 Passenger Door Actuation System Electrical Schematic

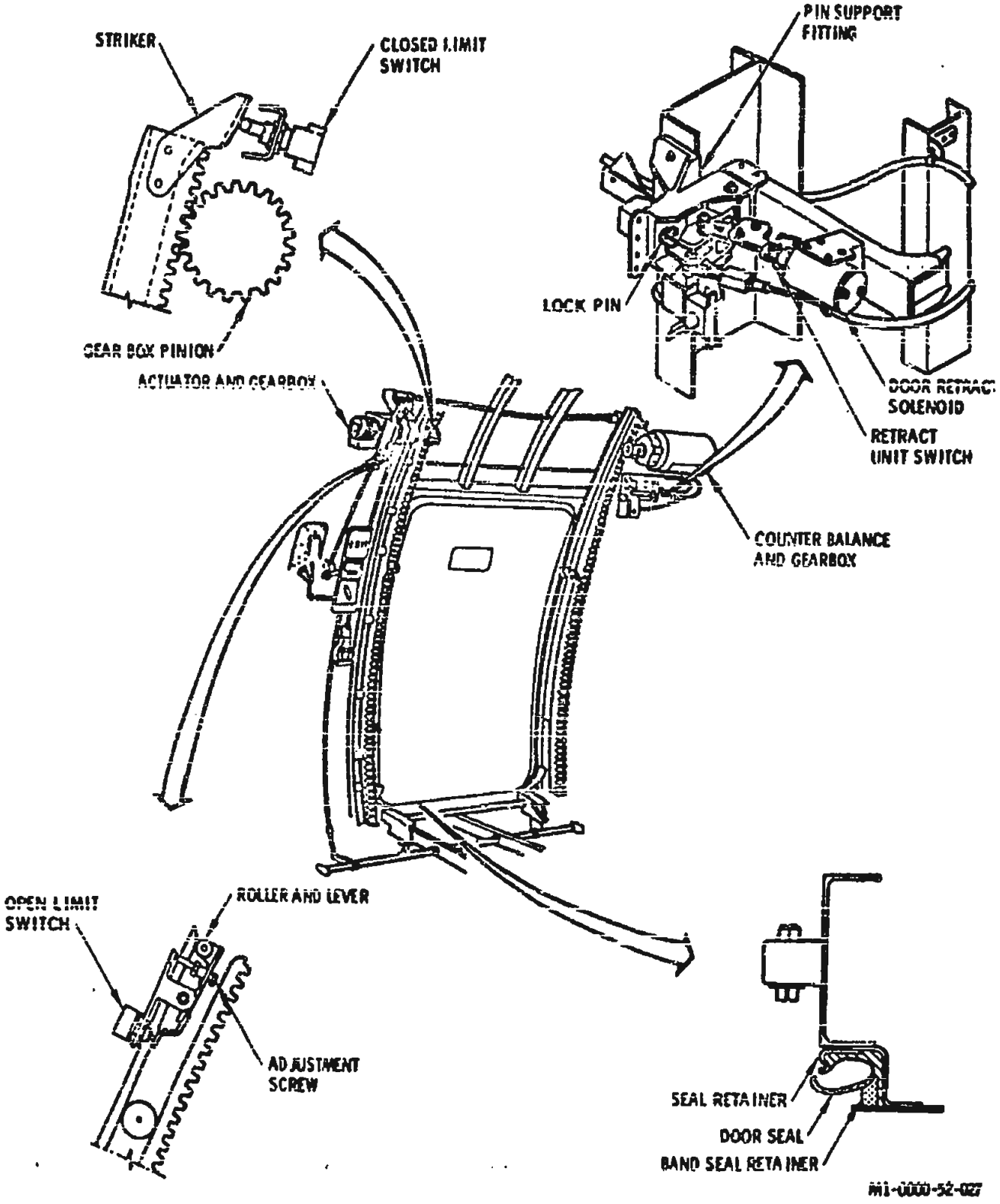
FIGURE	TITLE
SCHEM 2	L/R2 Passenger Door Actuation System Electrical Schematic
SCHEM 3	L/R3 Passenger Door Actuation System Electrical Schematic

COMPONENT	QTY	AREA/ACCESS	REFERENCE
PASSENGER DOOR COMPONENTS:			
ACTUATOR	6	FORWARD OF EACH PASSENGER DOOR	52-12-01
COUNTERBALANCE	6	AFT OF EACH PASSENGER DOOR	52-12-03
DOOR SEALS	5	ON EACH PASSENGER DOOR	52-11-52
LIMIT SWITCH, DOOR OPEN	6	ON EACH DOOR TRACK ADJACENT TO ACTUATOR EXCEPT R1 DOOR. R1 DOOR OPEN LIMIT SWITCH ON AFT DOOR TRACK ADJACENT TO COUNTERBALANCE	52-12-18
LIMIT SWITCH, DOOR CLOSED	6	ABOVE FWD PINION GEARBOX ON EACH PASSENGER DOOR EXCEPT R1. THIS SWITCH LOCATED ABOVE AFT PINION GEARBOX	52-12-19
LIMIT SWITCH, UPLOCK/DOWNLOCK RETRACT	6	ON EACH PASSENGER DOOR UP/DOWNLOCK ASSEMBLY	52-12-22
SOLENOID, PASSENGER DOOR RETRACT	6	ON EACH PASSENGER DOOR UP/DOWNLOCK ASSEMBLY	52-12-25

M1-0000-52-020

R
R

Component Location Index
Figure 101



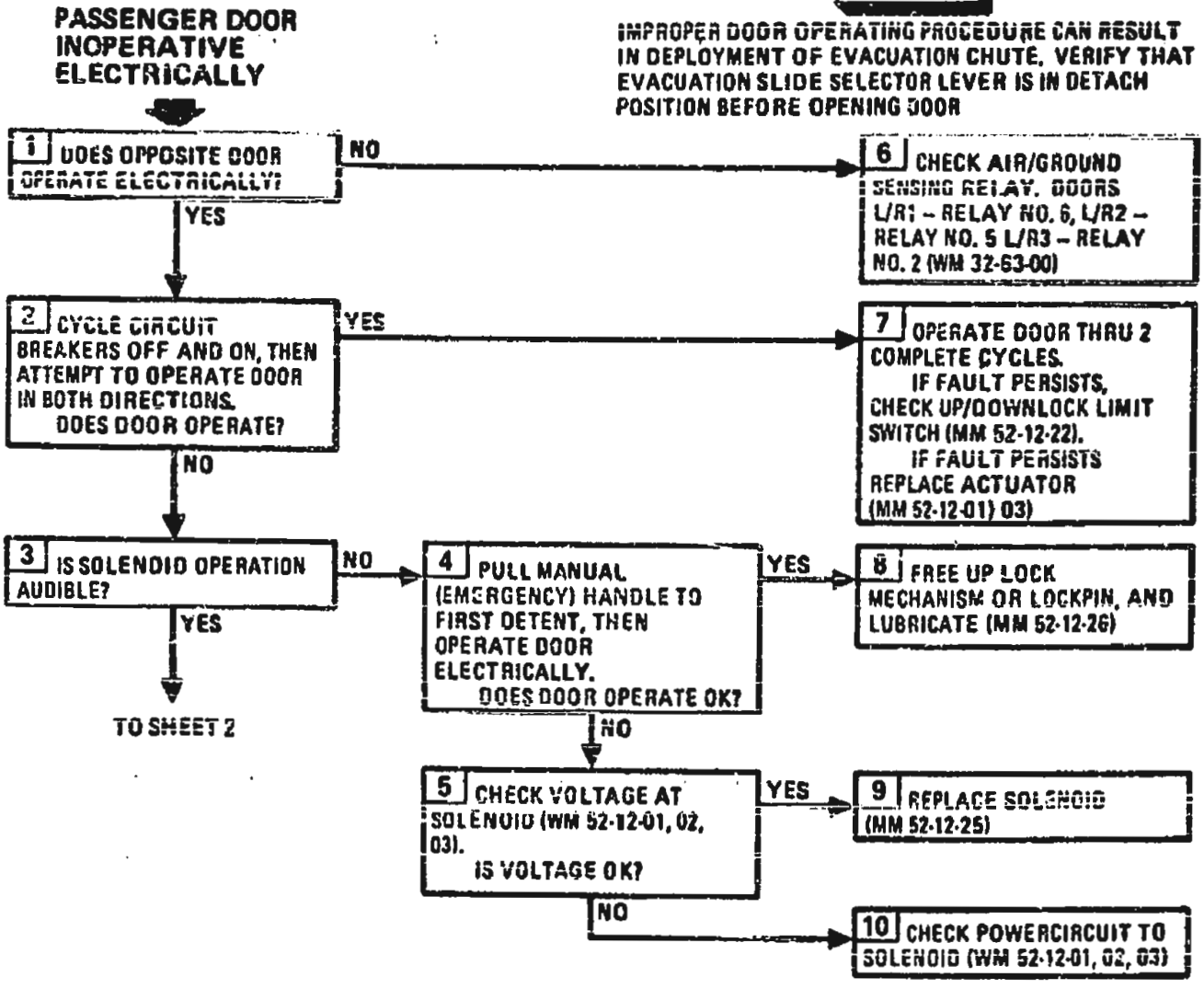
R
R

Component Locator Diagram
Figure 102

PREREQUISITES
ELECTRICAL POWER (MM 24-41-00)
CB'S: 1L10 AND 1L11
2L8
3H2, 3H3, 3H4
GALLEY LEFT:
DOOR L1–14A AND 19A
R1–17A AND 19A
L2–8A AND 20A
R2–11A AND 20A
L3–2A AND 21A
R3–5A AND 21A

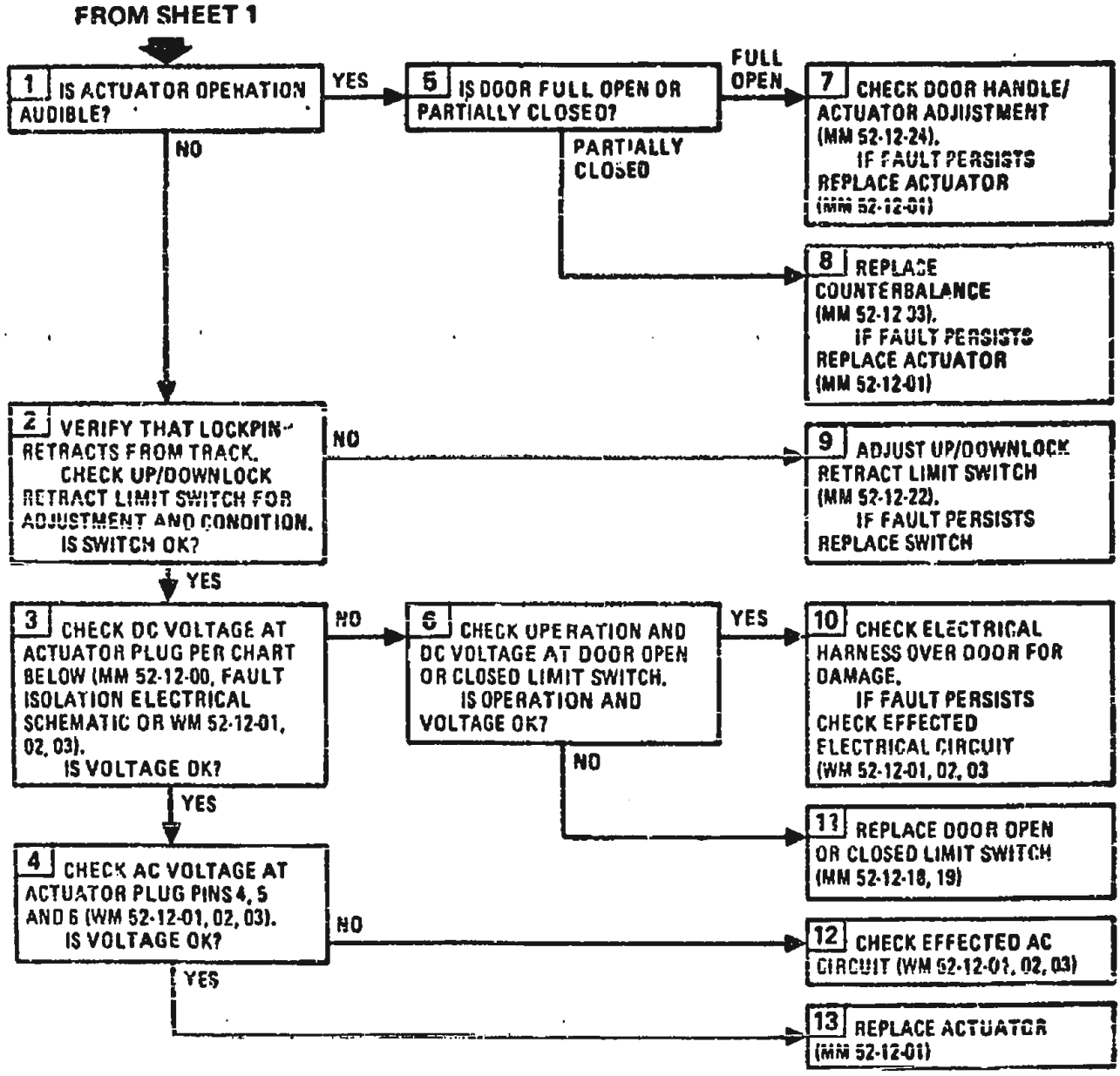
WARNING

IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN DEPLOYMENT OF EVACUATION CHUTE. VERIFY THAT EVACUATION SLIDE SELECTOR LEVER IS IN DETACH POSITION BEFORE OPENING DOOR


PASSENGER DOOR INOPERATIVE ELECTRICALLY
1 DOES OPPOSITE DOOR OPERATE ELECTRICALLY?
NO
6 CHECK AIR/GROUND SENSING RELAY. DOORS L/R1 – RELAY NO. 6, L/R2 – RELAY NO. 5 L/R3 – RELAY NO. 2 (WM 32-63-00)
YES
2 CYCLE CIRCUIT BREAKERS OFF AND ON, THEN ATTEMPT TO OPERATE DOOR IN BOTH DIRECTIONS. DOES DOOR OPERATE?
YES
7 OPERATE DOOR THRU 2 COMPLETE CYCLES. IF FAULT PERSISTS, CHECK UP/DOWNLOCK LIMIT SWITCH (MM 52-12-22). IF FAULT PERSISTS REPLACE ACTUATOR (MM 52-12-01) 03)
NO
3 IS SOLENOID OPERATION AUDIBLE?
NO
4 PULL MANUAL (EMERGENCY) HANDLE TO FIRST DETENT, THEN OPERATE DOOR ELECTRICALLY. DOES DOOR OPERATE OK?
YES
8 FREE UP LOCK MECHANISM OR LOCKPIN, AND LUBRICATE (MM 52-12-26)
YES
TO SHEET 2
NO
5 CHECK VOLTAGE AT SOLENOID (WM 52-12-01, 02, 03). IS VOLTAGE OK?
YES
9 REPLACE SOLENOID (MM 52-12-25)
NO
10 CHECK POWERCIRCUIT TO SOLENOID (WM 52-12-01, 02, 03)

M1-4403-52-330

R Passenger Door Inoperative Electrically
R Figure 103


FROM SHEET 1
1 IS ACTUATOR OPERATION AUDIBLE?
YES
NO
5 IS DOOR FULL OPEN OR PARTIALLY CLOSED?
FULL OPEN
PARTIALLY CLOSED
7 CHECK DOOR HANDLE/ ACTUATOR ADJUSTMENT (MM 52-12-24). IF FAULT PERSISTS REPLACE ACTUATOR (MM 52-12-01)
8 REPLACE COUNTERBALANCE (MM 52-12-33). IF FAULT PERSISTS REPLACE ACTUATOR (MM 52-12-01)
2 VERIFY THAT LOCKPIN RETRACTS FROM TRACK. CHECK UP/DOWNLOCK RETRACT LIMIT SWITCH FOR ADJUSTMENT AND CONDITION. IS SWITCH OK?
NO
9 ADJUST UP/DOWNLOCK RETRACT LIMIT SWITCH (MM 52-12-22). IF FAULT PERSISTS REPLACE SWITCH
YES
3 CHECK DC VOLTAGE AT ACTUATOR PLUG PER CHART BELOW (MM 52-12-00, FAULT ISOLATION ELECTRICAL SCHEMATIC OR WM 52-12-01, 02, 03). IS VOLTAGE OK?
NO
6 CHECK OPERATION AND DC VOLTAGE AT DOOR OPEN OR CLOSED LIMIT SWITCH. IS OPERATION AND VOLTAGE OK?
YES
10 CHECK ELECTRICAL HARNESS OVER DOOR FOR DAMAGE. IF FAULT PERSISTS CHECK EFFECTED ELECTRICAL CIRCUIT (WM 52-12-01, 02, 03
NO
11 REPLACE DOOR OPEN OR CLOSED LIMIT SWITCH (MM 52-12-18, 19)
YES
4 CHECK AC VOLTAGE AT ACTUATOR PLUG PINS 4, 5 AND 6 (WM 52-12-01, 02, 03). IS VOLTAGE OK?
NO
12 CHECK EFFECTED AC CIRCUIT (WM 52-12-01, 02, 03)
YES
13 REPLACE ACTUATOR (MM 52-12-01)

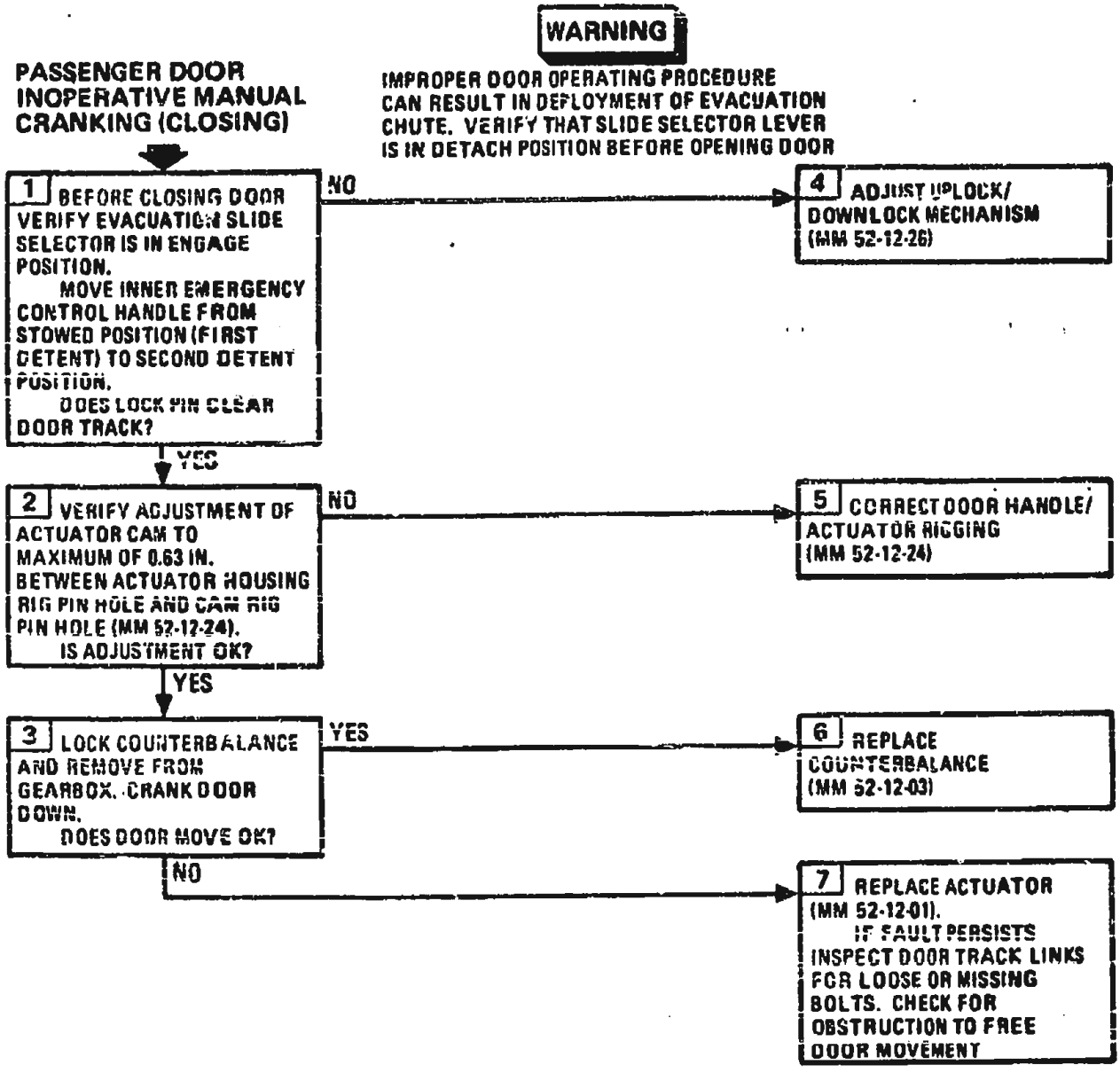
ACTUATOR PLUG PIN VOLTAGE CHECK

	R1	L1	R2	L2	R3	L3
DOOR OPEN	8-3	1-2	8-3	1-2	8-3	1-2
DOOR CLOSE	1-3	8-2	1-3	8-2	1-3	8-2

M1-0002-52-332

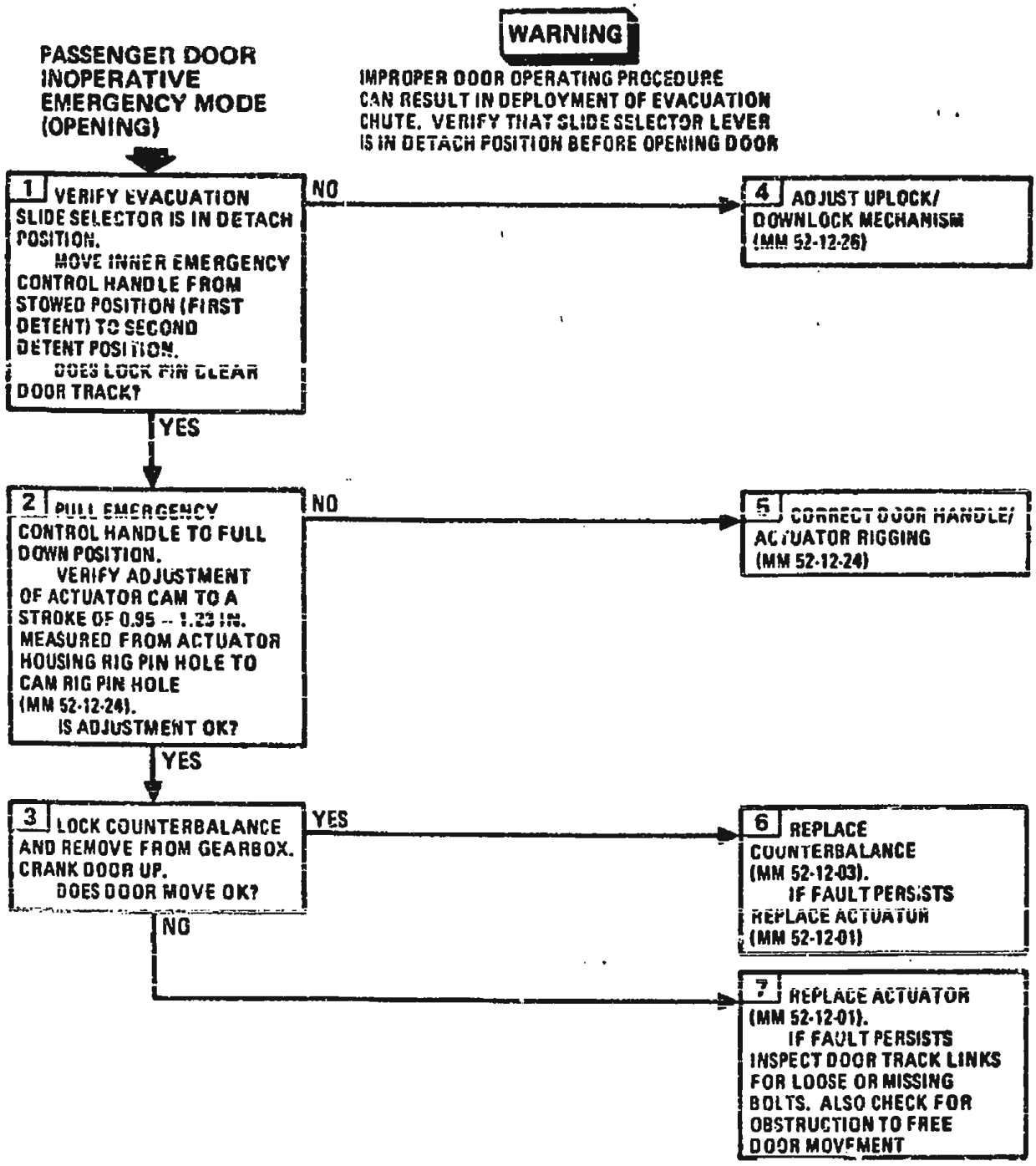
R Passenger Door Inoperative Electrically
R Figure 103 (Sheet 2)

EFFECTIVITY: ALL


WARNING
IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN DEPLOYMENT OF EVACUATION CHUTE. VERIFY THAT SLIDE SELECTOR LEVER IS IN DETACH POSITION BEFORE OPENING DOOR
PASSENGER DOOR INOPERATIVE MANUAL CRANKING (CLOSING)
1 BEFORE CLOSING DOOR VERIFY EVACUATION SLIDE SELECTOR IS IN ENGAGE POSITION.
MOVE INNER EMERGENCY CONTROL HANDLE FROM STOWED POSITION (FIRST DETENT) TO SECOND DETENT POSITION.
DOES LOCK PIN CLEAR DOOR TRACK?
NO
4 ADJUST UPLOCK/ DOWNLOCK MECHANISM (MM 52-12-26)
YES
2 VERIFY ADJUSTMENT OF ACTUATOR CAM TO MAXIMUM OF 0.63 IN. BETWEEN ACTUATOR HOUSING RIG PIN HOLE AND CAM RIG PIN HOLE (MM 52-12-24).
IS ADJUSTMENT OK?
NO
5 CORRECT DOOR HANDLE/ ACTUATOR RIGGING (MM 52-12-24)
YES
3 LOCK COUNTERBALANCE AND REMOVE FROM GEARBOX. CRANK DOOR DOWN.
DOES DOOR MOVE OK?
YES
6 REPLACE COUNTERBALANCE (MM 52-12-03)
NO
7 REPLACE ACTUATOR (MM 52-12-01).
IF FAULT PERSISTS INSPECT DOOR TRACK LINKS FOR LOOSE OR MISSING BOLTS. CHECK FOR OBSTRUCTION TO FREE DOOR MOVEMENT

M1-0101-52-336

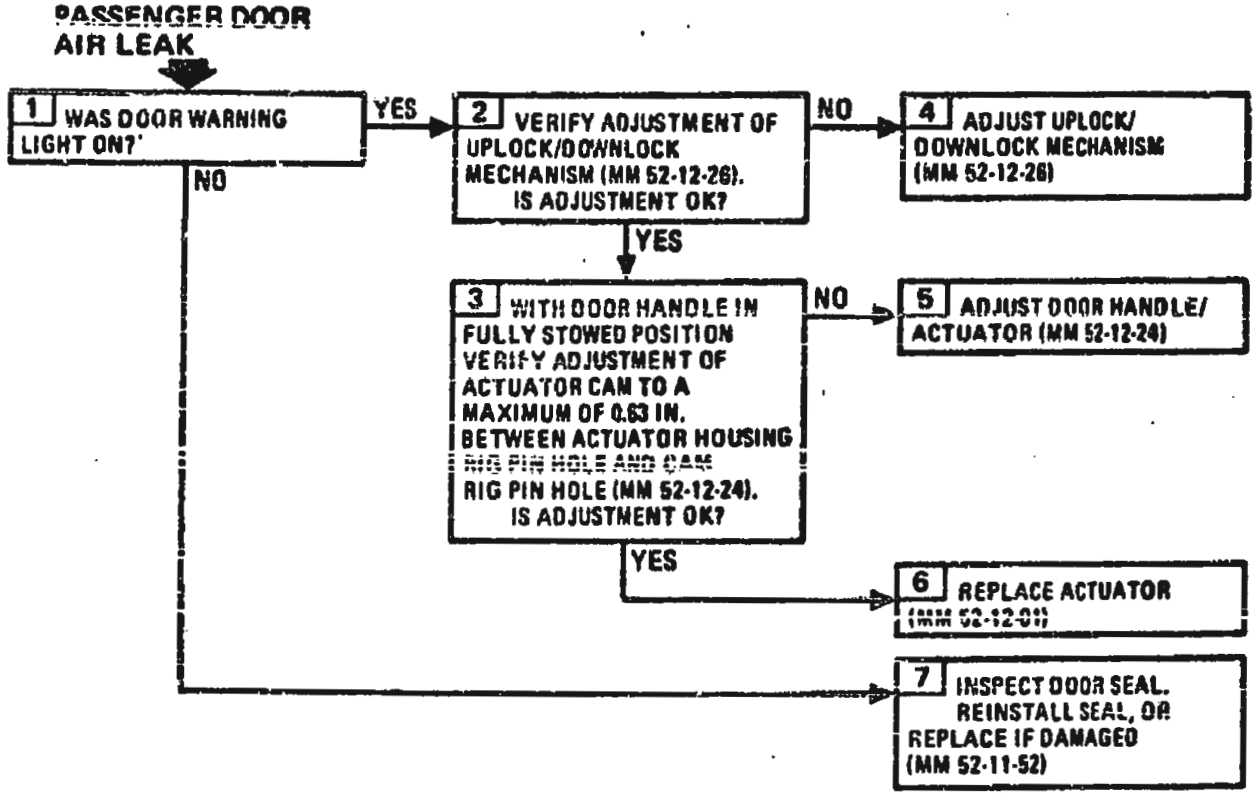
Passenger Door Inoperative Manually (Handcrank) (Closing)
Figure 104


PASSENGER DOOR INOPERATIVE EMERGENCY MODE (OPENING)
WARNING
IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN DEPLOYMENT OF EVACUATION CHUTE. VERIFY THAT SLIDE SELECTOR LEVER IS IN DETACH POSITION BEFORE OPENING DOOR
1 VERIFY EVACUATION SLIDE SELECTOR IS IN DETACH POSITION.
MOVE INNER EMERGENCY CONTROL HANDLE FROM STOWED POSITION (FIRST DETENT) TO SECOND DETENT POSITION.
DOES LOCK PIN CLEAR DOOR TRACK?
NO
4 ADJUST UPLOCK/ DOWNLOCK MECHANISM (MM 52-12-26)
YES
2 PULL EMERGENCY CONTROL HANDLE TO FULL DOWN POSITION.
VERIFY ADJUSTMENT OF ACTUATOR CAM TO A STROKE OF 0.95 -- 1.23 IN. MEASURED FROM ACTUATOR HOUSING RIG PIN HOLE TO CAM RIG PIN HOLE (MM 52-12-24).
IS ADJUSTMENT OK?
NO
5 CORRECT DOOR HANDLE/ ACTUATOR RIGGING (MM 52-12-24)
YES
3 LOCK COUNTERBALANCE AND REMOVE FROM GEARBOX. CRANK DOOR UP.
DOES DOOR MOVE OK?
YES
6 REPLACE COUNTERBALANCE (MM 52-12-03).
IF FAULT PERSISTS REPLACE ACTUATOR (MM 52-12-01)
NO
7 REPLACE ACTUATOR (MM 52-12-01).
IF FAULT PERSISTS INSPECT DOOR TRACK LINKS FOR LOOSE OR MISSING BOLTS. ALSO CHECK FOR OBSTRUCTION TO FREE DOOR MOVEMENT

M1-0102-52-336

R R Passenger Door Inoperative Mechanically (Opening)
Figure 105

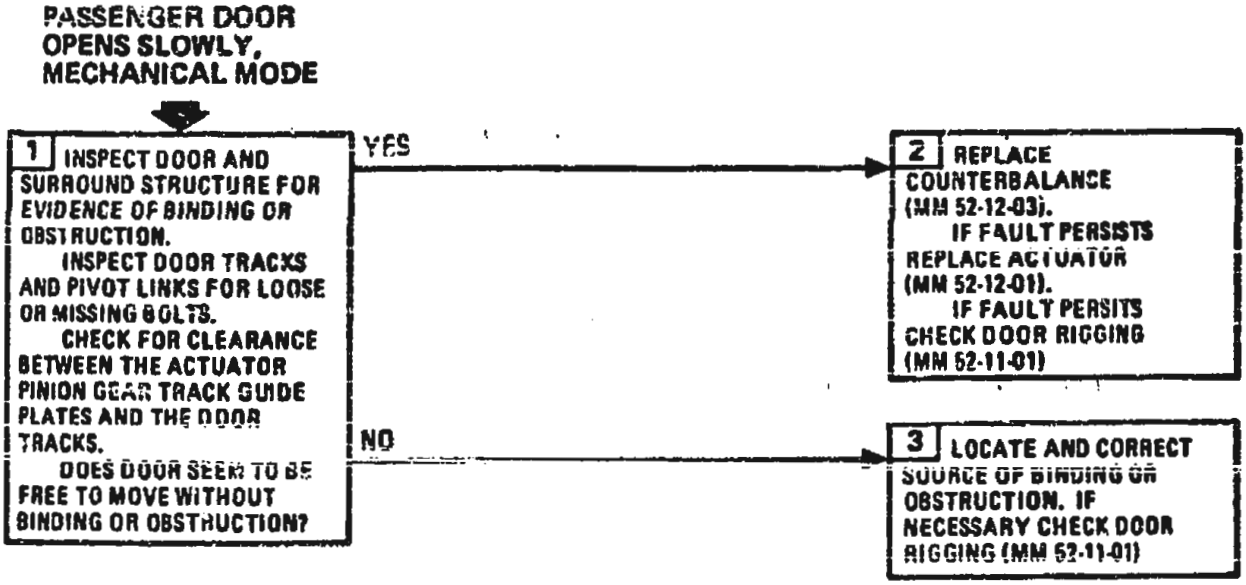
EFFECTIVITY: ALL


PASSENGER DOOR AIR LEAK
1 WAS DOOR WARNING LIGHT ON?
YES
NO
2 VERIFY ADJUSTMENT OF UPLOCK/DOWNLOCK MECHANISM (MM 52-12-26). IS ADJUSTMENT OK?
NO
4 ADJUST UPLOCK/ DOWNLOCK MECHANISM (MM 52-12-26)
YES
3 WITH DOOR HANDLE IN FULLY STOWED POSITION VERIFY ADJUSTMENT OF ACTUATOR CAM TO A MAXIMUM OF 0.63 IN. BETWEEN ACTUATOR HOUSING RIG PIN HOLE AND CAM RIG PIN HOLE (MM 52-12-24). IS ADJUSTMENT OK?
NO
5 ADJUST DOOR HANDLE/ ACTUATOR (MM 52-12-24)
YES
6 REPLACE ACTUATOR (MM 52-12-01)
7 INSPECT DOOR SEAL. REINSTALL SEAL, OR REPLACE IF DAMAGED (MM 52-11-52)

M1-0101-52-340

R
R

Passenger Door Air Leak
Figure 106

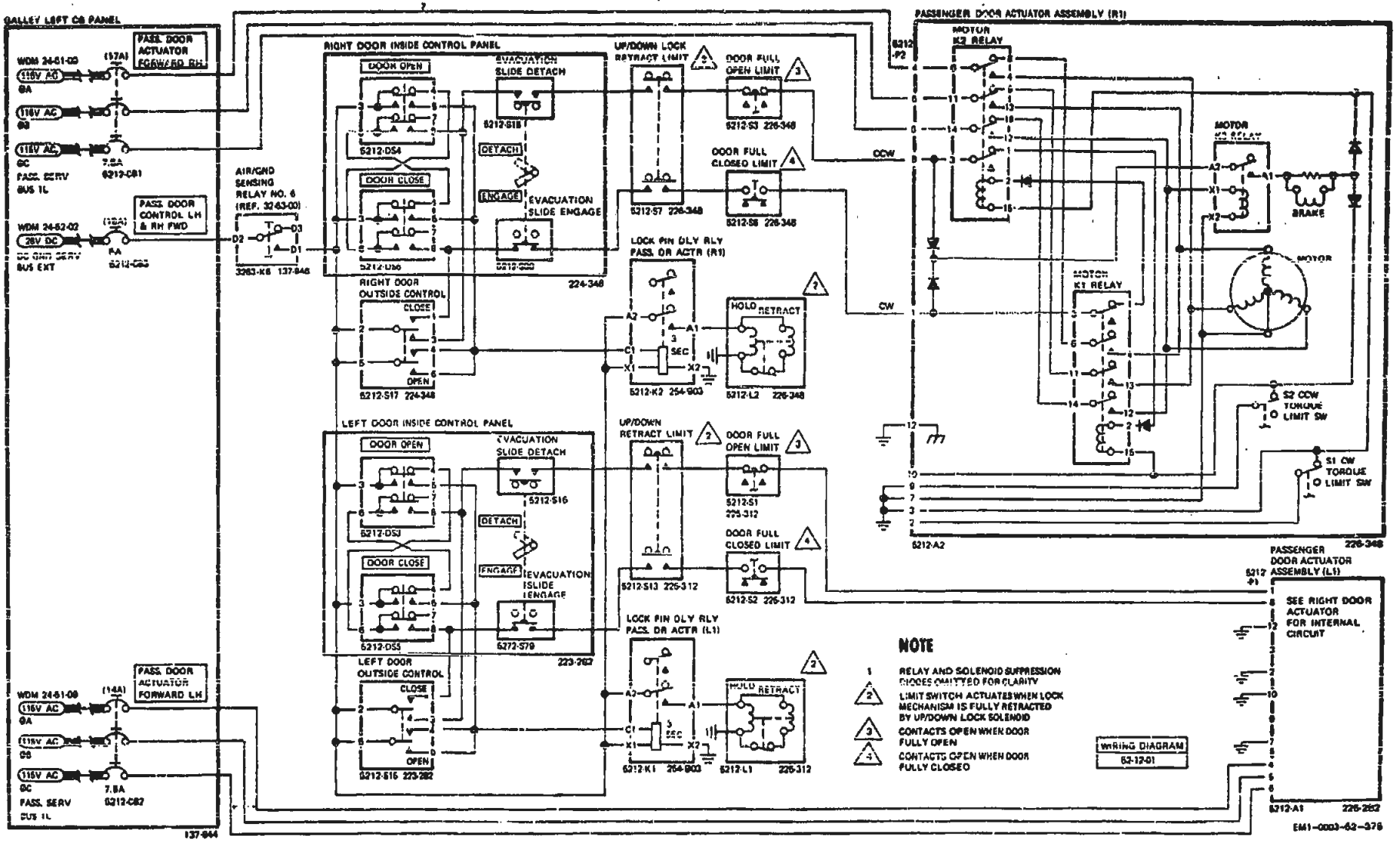

PASSENGER DOOR OPENS SLOWLY, MECHANICAL MODE
1 INSPECT DOOR AND SURROUND STRUCTURE FOR EVIDENCE OF BINDING OR OBSTRUCTION.
INSPECT DOOR TRACKS AND PIVOT LINKS FOR LOOSE OR MISSING BOLTS.
CHECK FOR CLEARANCE BETWEEN THE ACTUATOR PINION GEAR TRACK GUIDE PLATES AND THE DOOR TRACKS.
DOES DOOR SEEM TO BE FREE TO MOVE WITHOUT BINDING OR OBSTRUCTION?
YES
2 REPLACE COUNTERBALANCE (MM 52-12-03).
IF FAULT PERSISTS REPLACE ACTUATOR (MM 52-12-01).
IF FAULT PERSITS CHECK DOOR RIGGING (MM 52-11-01)
NO
3 LOCATE AND CORRECT SOURCE OF BINDING OR OBSTRUCTION. IF NECESSARY CHECK DOOR RIGGING (MM 52-11-01)

M1-0101-52-423

R Passenger Door Opens Slowly, Mechanical Mode
R Figure 107

EFFECTIVITY: ALL

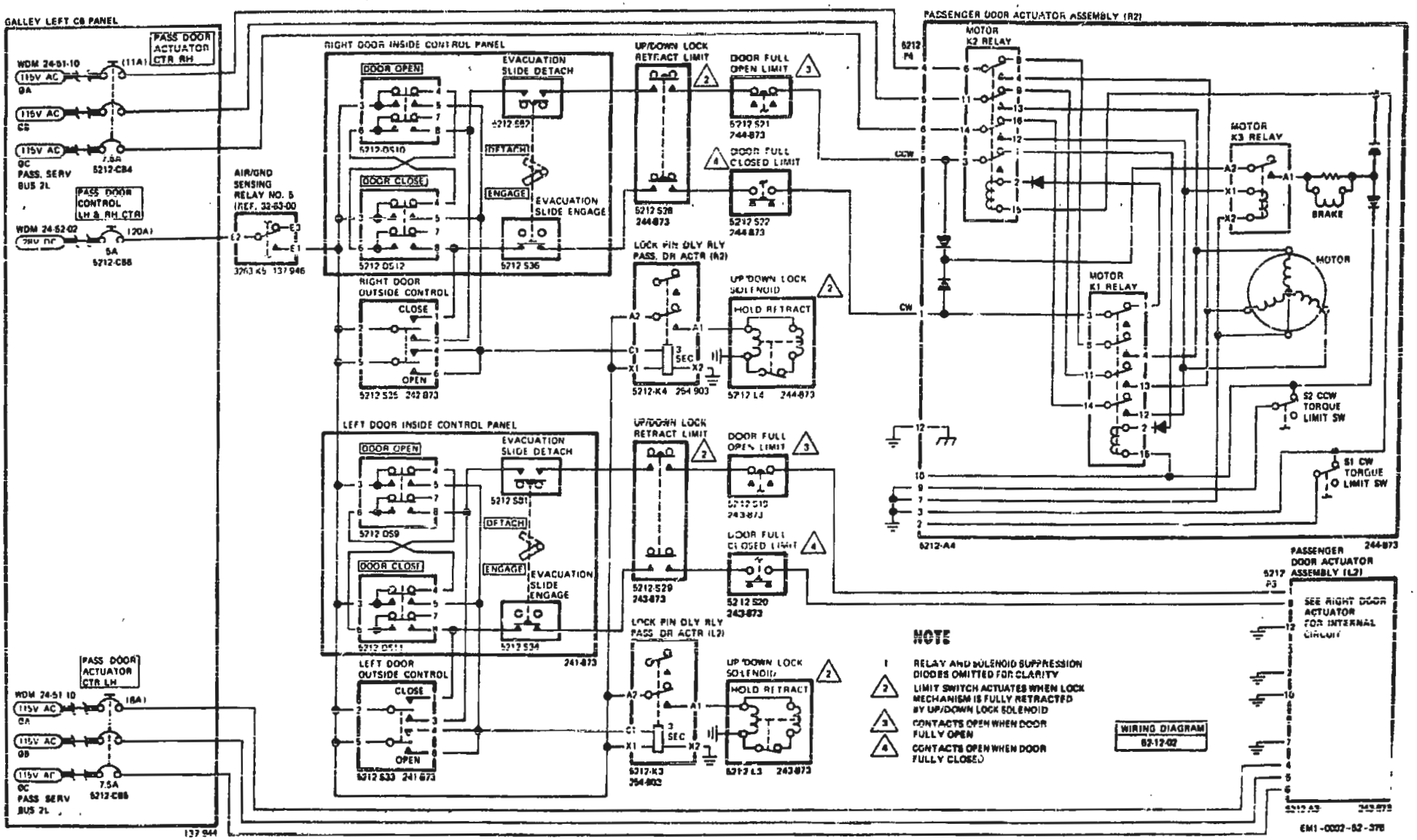
001B



R L/R1 Passenger Door Actuation System Electrical Schematic
R SCHEM 1

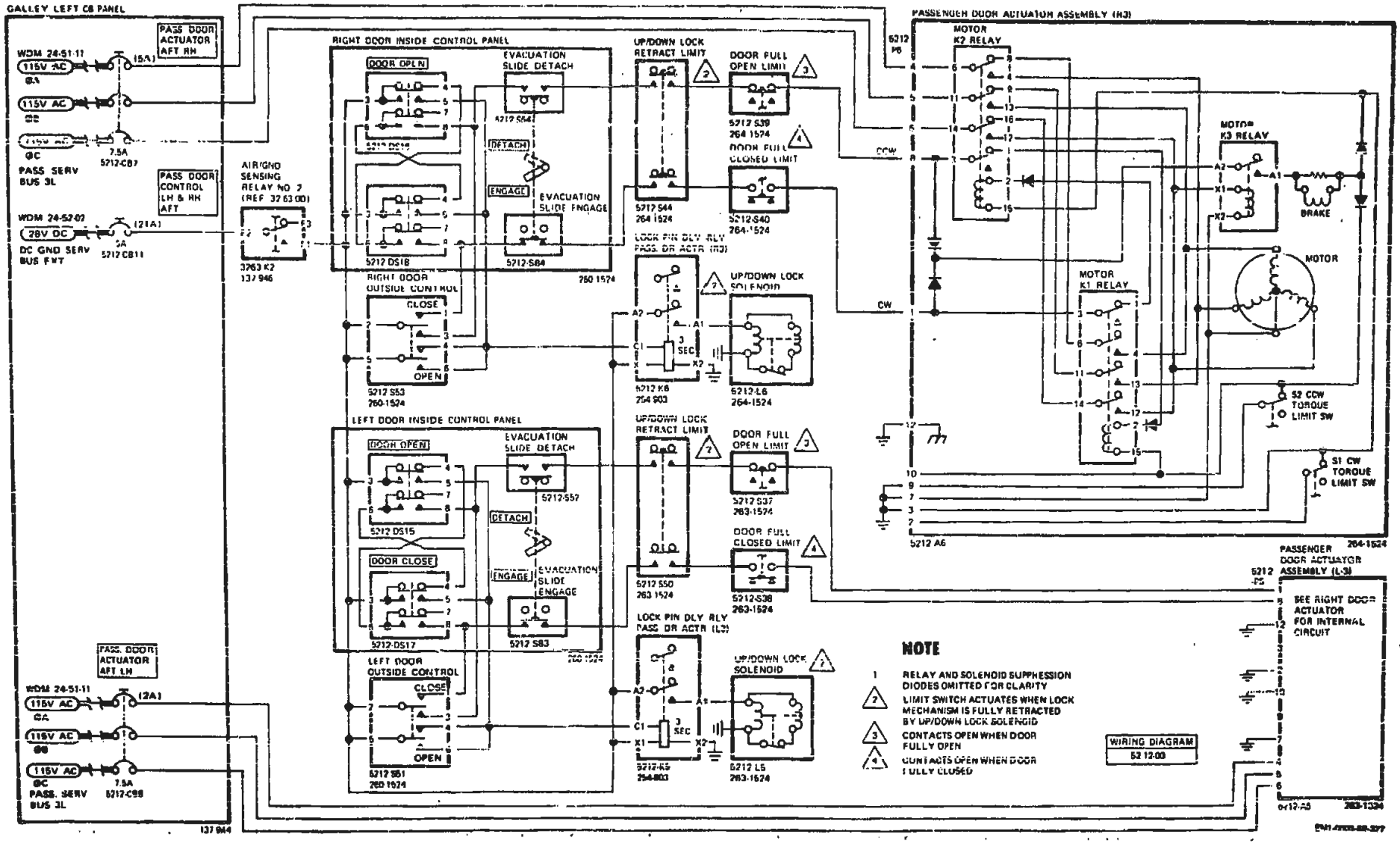
EFFECTIVITY: ALL

001B



R L/R2 Passenger Door Actuation System Electrical Schematic
R SCHEM 2

EFFECTIVITY: ALL



R L/R3 Passenger Door Actuation System Electrical Schematic
R SCHEM 3

EFFECTIVITY: ALL

001B

PASSENGER DOOR ACTUATION SYSTEM - MAINTENANCE PRACTICES

1. General

The procedures in this section are concerned with electrical and mechanical door actuating systems inoperative. Note that some aircraft have the electrical actuation mode installed on all 8 passenger doors. Only the T-handle operation is required to be operative on those airplanes without the electrical actuation system on L4 and R4 doors.

2. Referenced Procedures

25-61-06	Girt Bar Arming System - Adjustment and Test
25-61-10	Evacuation Slide/Raft Assembly - Removal and Installation
52-12-26	Passenger Door Lock Mechanism - Inspection and Check

3. Deactivation Procedures

A. Passenger Door(s) Electrically Inoperative

(1) Verify that affected door(s) is operative in the emergency mode using the T-handle, reference Para 4A.

(2) Verify that affected door(s) is operative in the mechanical (hand crank) mode, reference Para 4B, and Para 4C if the L1 door is affected.

(3) Verify that door is closed and applicable door warning light on Flight Engineer/Second Officers annunciator panel is off.

R CAUTION: OPENING THE ASSOCIATED PASSENGER DOOR CIRCUIT
R BREAKER "PASS DOOR ACTUATOR" DEACTIVATES ONLY THE
R ASSOCIATED DOOR. DO NOT OPEN THE ASSOCIATED "PASS
R DOOR CONTROL" CIRCUIT BREAKER AS THIS ALSO
R DISABLES THE OPPOSITE SIDE DOOR.

R (4) On galley left circuit breaker panel, open and tag
R applicable passenger door circuit breaker PASS DOOR
R ACTUATOR (Ref. 52-12-00, Adjustment and Test, Table 501).

(5) Verify that evacuation slide selector lever is in ENGAGE position.

(6) Placard door controls for emergency use only.

(7) Install placard on FE/SO panel denoting inoperative doors.

(8) Make appropriate entry in aircraft log book.

B. Passenger Door(s) Mechanically (Hand Crank) Inoperative

(1) Verify that affected door(s) are operative in the emergency mode using the T-handle, reference Para 4A.

(2) Verify that affected door(s) is operative in the electrical mode, reference Para 4D.

(3) Verify that door is closed and applicable door warning light on FE/SO annunciator panel is off.

(4) Verify that evacuation slide selector lever is in ENGAGE position.

(5) Placard door(s) to inform cabin crew that mechanical (hand crank) mode is inoperative.

(6) Install placard on FE/SO panel informing FE/SO that mechanical (hand crank) mode on a specific door(s) is inoperative.

(7) Make appropriate entry in aircraft log book.

C. Passenger Door Electrical and Mechanical (Hand Crank) Modes Inoperative

NOTE: One passenger door may be inoperative in the electrical and mechanical (hand crank) mode. In this event, the deactivation procedure to follow is outlined in MEL Procedures Item No. 25-61-10 and as specified below.

R CAUTION: OPENING THE ASSOCIATED PASSENGER DOOR CIRCUIT
R BREAKER "PASS DOOR ACTUATOR" DEACTIVATES ONLY THE
R ASSOCIATED DOOR. DO NOT OPEN THE ASSOCIATED "PASS
R DOOR CONTROL" CIRCUIT BREAKER AS THIS ALSO
R DISABLES THE OPPOSITE SIDE DOOR.

R (1) On galley left circuit breaker panel, open and tag
R applicable passenger door circuit breaker PASS DOOR
R ACTUATOR.

(2) Remove plastic cover from emergency PULL DOWN (tee) handle and pull handle all the way down. (This releases the door actuator clutch and retracts the lock pin from the door track.)

(3) Gain access to counterbalance through sidewall storage cabinet aft of door.

(4) Engage loader/unloader worm gear to counterbalance ballscrew by rotating Socket A in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(5) Crank door down by rotating socket B on the loader/unloader until door closes completely (Rotate socket B clockwise for lefthand doors, counterclockwise for righthand doors).

WARNING: DO NOT DISENGAGE WORM SHAFT FROM WORM GEAR.

(6) Push tee handle back to stowed position (full up). (This inserts lock pin in the door track.)Reinstall plastic cover over handle.

(7) Verify that lock pin is properly engaged in the door track in accordance with MM 52-12-26 (Inspection and Check, Paragraph 3B).

(8) Placard door controls.

(9) Install placard on FE/SO panel denoting the inoperative door.

WARNING: AFTER REPAIR OR REPLACEMENT OF ACTUATOR, DO NOT ATTEMPT ELECTRICAL ACTUATION OF DOOR UNTIL WORM SHAFT IS DISENGAGED FROM WORM GEAR.

(10) Make appropriate entry in the aircraft log book.

4. Operational Verification Procedures

A. Operational Test - Emergency Mode from Inside aircraft

WARNING: IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN DEPLOYMENT OF EVACUATION SLIDE.

VERIFY OPERATION OF GIRT BAR ARMING SYSTEM (REF. MM 25-61-06) BEFORE PERFORMING THIS TEST.

(1) With door closed, place evacuation slide selector lever in DETACH position.

WARNING: DO NOT PULL EMERGENCY PULL DOWN HANDLE WITH EVACUATION SLIDE SELECTOR LEVER IN ENGAGE POSITION.

(2) Remove plastic cover from emergency PULL DOWN (tee) handle and pull handle to full down position.

(3) Verify that applicable door warning light on Flight Engineer/Second Officers annunciator panel comes on.

CAUTION: WHEN USING EMERGENCY HANDLE TO OPEN DOOR, ALLOW SOOR TO GO FULL OPEN. STOPPING DOOR AT INTERMEDIATE POSITION CAN CAUSE PREMATURE FAILURE OF DOOR ACTUATOR.

(4) Verify that door is stopped in open position by overhead bumpers within the time limits as follows:

(a) L1 door, 3.3 to 6.3 seconds.

(b) R1 door, 3.1 to 6.1 seconds.

(c) L/R2 and L/R3 doors, 3.0 to 6.0 seconds.

NOTE: This confirms operation of the actuator clutch release mechanism and counterbalance.

(5) Push tee handle to stowed position and replace plastic cover. Verify that door warning light remains on.

B. Operational Test - Manual Close from Inside Aircraft

(1) With door open and oor warning light on, verify that evacuation slide selector is in ENGAGE position.

CAUTION: DAMAGE MAY OCCUR IF DOOR CLOSURE IS ATTEMPTED WITH EVACUATION SLIDE SELECTION IN DETACH POSITION.

(2) Remove plastic cover from inside PULL DOWN (tee) handle and pull handle to first detent.

(3) Open trim cover for manual drive socket, at forward side of door below girt bar selector panel.

(4) Close door as follows:

(a) Insert manual drive speed wrench assembly (or 1/2-inch drive speed wrench) in socket and crank

door toward the closed position (approximately 200 turns).

NOTE: If door will not manually drive down, tee handle has been pulled past the first detent and actuator clutch is disengaged. To engage clutch, push handle up slightly into the first detent and then crank door down.

(b) Stow tee handle fully up after cranking door 1/3 toward closed position, then continue cranking until door is closed.

(5) Verify that door warning light has gone out. If not, verify that lock pin protrudes through door track.

(6) Remove crank and verify that manual drive socket does not rotate back in opening direction. If rotation is noted, verify that lock pin still has freedom of motion and is not jammed in door track.

NOTE: If the door is inadvertently closed with the evacuation slide selector lever in the Detach position, crank door back open approximately 18 inches and inspect the girt bar retainer fittings for damage, and verify that breakaway wire is intact (Ref. MM 25-61-10). Move evacuation slide selector lever to ENGAGE and crank door closed. Repeat Steps (5) and (6).

(7) Verify that girt bar is engaged in latches at bottom of door.

(8) Replace plastic cover over inside tee handle.

C. Operational Test - Manual Close from Outside Aircraft L1 Door Only

NOTE: One person should be stationed inside aircraft to verify proper door closure.

(1) With door open and door warning light on, verify that outside PULL DOWN (tee) handle is in full-in (stowed) position.

CAUTION: EVACUATION SLIDE SELECTOR MUST BE IN ENGAGE POSITION BEFORE CLOSING DOOR.

(2) Verify that evacuation slide selector is in ENGAGE position.

(3) Remove plastic cover from inside tee handle.

(4) Pull inside tee handle to first detent position.

(5) Close door as follows:

(a) On inside, forward of door below girt bar selector, open trim cover for manual drive socket and insert 1/2-inch drive speed wrench in socket and crank door down approximately four inches.

NOTE: If door will not manually drive down, tee handle has been pulled past the first detent and actuator clutch is disengaged. To engage clutch, push handle back slightly into the first detent and then crank door down approximately four inches.

(b) Push tee handle back to stowed position (full up) and re-install plastic cover over handle.

(6) On the outside, forward of door, insert 1/2-inch drive speed wrench in socket and crank door down until closed. Verify that door warning light goes out, if not, verify that solenoid operated lock pin protrudes through door track and still has freedom of movement after crank is removed.

D. Operational Test - Electrical Mode from Inside Aircraft

CAUTION: VERIFY OPERATION OF GIRT BAR ARMING SYSTEM (REF. MM 25-61-06) BEFORE PERFORMING THIS TEST.

(1) With door closed, place evacuation slide selector lever in DETACH position.

(2) Depress and hold DOOR OPEN switch. Verify that door stops automatically in fully open position.

NOTE: Door can be stopped in any intermediate position by releasing switch.

(3) Release DOOR OPEN switch. Verify that applicable door warning light on Flight Engineer/Second Officers annunciator panel comes on.

(4) Place evacuation slide selector lever in ENGAGE position.

(5) Depress and hold DOOR CLOSE switch. Verify that door stops automatically in closed position.

(6) Release DOOR CLOSE switch. Verify that door warning light goes off. If not, verify that solenoid-operated lock pin protrudes through door track.

NOTE: Step (5) and (6) confirm that the actuator clutch holds properly.

CAUTION: DOOR OPERATION IS LIMITED TO FIVE COMPLETE ELECTRICAL OPEN/CLOSE CYCLES WITHOUT EVACUATION SLIDE ATTACHED, OR TEN ELECTRICAL OPEN/CLOSE CYCLES WITH EVACUATION SLIDE ATTACHED, FOLLOWED BY AN ACTUATOR COOLING PERIOD OF FIVE MINUTES BEFORE RECYCLING THE DOOR.

PASSENGER DOOR ACTUATION SYSTEM - ADJUSTMENT AND TEST

1. General

This procedure outlines the steps to be performed to verify operation of a passenger door. The procedure is the same for each passenger door. The door must operate smoothly with no binding during each of the tests specified herein.

2. Referenced Procedures

24-41-00	External Power/Ground Service System - Maintenance Practices
25-61-06	Girt Bar Arming System - Adjustment and Test
25-61-10	Emergency Escape Slide/Raft Assembly - Removal and Installation
52-12-26	Passenger Door Lock Mechanism - Inspection and Check

3. Adjustment/Test

A. Preparation for Operational Test

(1) Turn on electrical power (Ref. 24-41-00).

(2) On galley left circuit breaker panel, zone 131, verify applicable passenger door circuit breakers PASS DOOR ACTUATOR and PASS DOOR CONTROL specified in Table 501 are closed.

Circuit Breakers
Table 501

DOOR ACTUATION SYSTEM	CIRCUIT BREAKER
L1	PASS. DOOR ACTUATOR - FORWARD - LH (14A)
	PASS. DOOR - CONTROL - LH & RH - FWD (19A)
R1	PASS. DOOR ACTUATOR - FORWARD - RH (17A)
	PASS. DOOR - CONTROL - LH & RH - FWD (19A)

Circuit Breakers (Cont)
Table 501

DOOR ACTUATION SYSTEM	CIRCUIT BREAKER
L2	PASS. DOOR ACTUATOR - CENTER - LH (8A)
	PASS. DOOR - CONTROL - LH & RH - CTR (20A)
R2	PASS. DOOR ACTUATOR - CENTER - RH (11A)
	PASS. DOOR - CONTROL - LH & RH - CTR (20A)
L3	PASS. DOOR ACTUATOR - AFT LH (2A)
	PASS. DOOR - CONTROL - LH & RH - AFT (21A)
R3	PASS. DOOR ACTUATOR - AFT - RH (5A)
	PASS. DOOR - CONTROL - LH & RH - AFT (21A)

(3) On pilots overhead circuit breaker panel CB1, zone 210, verify that circuit breakers LANDING GEAR - PROX SW PWR - NO. 1 and LANDING GEAR - PROX SW PWR - NO. 4 are closed.

On Flight Engineer/Second Officers overhead circuit breaker panel CB2, zone 215, verify that circuit breaker MLG - GND - SENSE is closed.

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, verify that circuit breakers PROXIMITY SWITCH - 2, PROXIMITY SWITCH - 3, and DOOR - WARN - LTS are closed.

B. Operational Test - Electrical Mode from Inside Aircraft

WARNING: AFTER REPAIR OR REPLACEMENT OF ACTUATOR OR COUNTERBALANCE, DO NOT ATTEMPT ELECTRICAL ACTUATION OF DOOR UNTIL WORM SHAFT IS DISENGAGED FROM WORM GEAR ON COUNTERBALANCE LOAD UNIT.

CAUTION: VERIFY OPERATION OF GIRT BAR ARMING SYSTEM (REF. 25-61-06) BEFORE PERFORMING THIS TEST.

(1) With door closed, place evacuation slide selector lever in DETACH position.

(2) Depress and hold DOOR OPEN switch. Verify that door stops automatically in fully open position.

NOTE: Door can be stopped in any intermediate position by releasing switch.

(3) Release DOOR OPEN switch. Verify that applicable door warning light on Flight Engineer/Second Officers annunciator panel comes on.

(4) Place evacuation slide selector lever in ENGAGE position.

(5) Depress and hold DOOR CLOSE switch. Verify that door stops automatically in closed position.

(6) Release DOOR CLOSE switch. Verify that door warning light goes off.

NOTE: Steps (5) and (6) confirm that the actuator clutch holds properly.

CAUTION: DOOR OPERATION IS LIMITED TO FIVE COMPLETE OPEN/CLOSE CYCLES WITHOUT EVACUATION SLIDE ATTACHED, OR TO TEN OPEN/CLOSE CYCLES WITH EVACUATION SLIDE ATTACHED, FOLLOWED BY AN ACTUATOR COOLING PERIOD OF FIVE MINUTES BEFORE RECYCLING THE DOOR.

C. Operational Test - Electrical Mode from Outside Aircraft

WARNING: VERIFY OPERATION OF GIRT BAR ARMING SYSTEM (REF. 25-61-06) BEFORE PERFORMING THIS TEST.

R R (1) With door closed, and inside evacuation slide selector lever in ENGAGE position perform the following:

R R NOTE: Workman should be stationed inside cabin to verify evacuation slide selector movement.

R R (a) Unlatch outer PULL DOWN (tee) handle by depressing pushbutton.

R R (b) Pull outer handle down to first detent and release handle.

R R R (c) Verify that slide selector lever beneath inside door control handle has moved to DETACH position but inside handle itself has not moved.

R R (d) Push outer tee handle to full-up (stowed) position.

(2) Open switch housing and hold toggle switch in up position. Verify that door stops automatically in fully open position.

NOTE: Door can be stopped in any intermediate position by releasing switch.

(3) Release toggle switch. Verify that applicable door warning light on Flight Engineer/Second Officers annunciator panel comes on.

(4) Inside cabin, place evacuation slide selector lever in ENGAGE position.

(5) Hold toggle switch in down position. Verify that door stops automatically in closed position.

(6) Release toggle switch. Verify that door warning light goes off.

(7) Latch switch housing cover.

CR D. Operational Test - Emergency Mode

CR NOTE: Evacuation Slide/Slide Raft must be installed on door
CR for this test.

CR A stop watch or other timing device is required in
CR the performance of this test.

CR WARNING: IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN
CR DEPLOYMENT OF EVACUATION SLIDE.

CR (1) Actuate girt bar selector lever several times between
CR ENGAGE nad DETACH and check that latches at girt bar
CR floor fittings are in up position with lever in ENGAGE
CR and are in down position with lever in DETACH.

CR (2) With door closed, place evacuation slide girt bar
CR selector lever in DETACH position.

CR (3) Verify that applicable door warning light on Flight
CR Engineer annunciator panel is operative and out.

CR (4) Remove plastic cover from emergency PULL DOWN T-handle.
CR Save cover for later reinstallation.

CR WARNING: DO NOT PULL EMERGENCY PULL DOWN T-HANDLE WITH
CR EVACUATION SLIDE SELECTOR LEVER IN ENGAGE
CR POSITION.

CR (5) Slowly pull inside emergency T-handle to its first
CR detent position and release T-handle. Do not pull
CR handle past first detent to full down position, which
CR will cause door to open.

CR (a) Verify that applicable door warning light on
CR Flight Engineer annunciator panel is on.

CR (b) Verify that lock pin is withdrawn from door track
CR and that door does not move. (This confirms
CR operation of the actuator brake).

CR CAUTION: WHEN USING EMERGENCY HANDLE TO OPEN DOOR, ALLOW
CR DOOR TO GO FULL OPEN. RE-STOWING HANDLE AND
CR STOPPING DOOR AT INTERMEDIATE POSITION CAN CAUSE
CR PREMATURE FAILURE OF DOOR ACTUATOR.

CR (6) With a stop watch or other timing device, prepare to
CR time door opening to full open position against
CR overhead bumpers.

CR CAUTION: SELECTOR LEVER MUST BE IN DETACH POSITION
CR BEFORE PULLING T-HANDLE.

CR Pull inside T-handle to its second detent (full down
CR position) and release handle.

CR (a) Verify that door was stopped in full open position
CR by overhead bumpers within the time limits as
CR follows:

CR L-1 door ---------- 3.3 to 6.3 seconds

CR R-1 door ---------- 3.1 to 6.1 seconds

CR L/R-2 and L/R-3 doors --------- 3.0 to 6.0 seconds

CR (This confirms operation of the actuator brake
CR release mechanism and speed limiter and the
CR counterbalance).

CR (b) Push T-handle to stowed position and verify that
CR applicable door warning light on annunciator panel
CR remains on.

CR If door did not open within applicable time limits
CR (time too long or too short), the following
CR requirements apply:

CR (1) If aircraft in Check "C" or higher maintenance
CR check, corrections must be made. (Reference
CR 52-12-00, Page 101, etc., Fault Isolation).

CR If door opening time too short (door too fast), in
CR addition to corrections to door actuation system,
CR door overhead bumpers and structure must be

CR checked for possible damage. Damage must be
CR repaired.

CR The Operational Test in Emergency Mode must be
CR repeated, and door must open within applicable
CR time limits prior to further flight.

CR (2) If aircraft not in Check "C" or higher maintenance
CR check, corrections should be made. (Reference
CR 52-12-00, Page 101, etc., Fault Isolation). If
CR corrections are not made, the applicable door and
CR evacuation slide must be considered inoperative
CR until corrections have been completed.

CR If door opening time too short (door too fast),
CR prior to further flight, door overhead bumpers and
CR structure must be checked for possible damage.
CR Damage must be repaired.

CR Refer to MEDP for dispatch of aircraft with
CR door/evacuation slide inoperative.

CR NOTE: If aircraft is to be dispatched per MEDP,
CR with door/evacuation slide inoperative,
CR remaining steps in this Operational Test
CR may be omitted.

CR If door has opened within applicable time limits,
CR continue with the further steps of this test.

CR (7) Lower door approximately six to eight inches either
CR electrically or by manual cranking.

CR NOTE: Before lowering by manual cranking, pull inside
CR emergency T-handle to first detent to withdraw
CR lockpin.

CR (8) Check inside T-handle is fully up in stowed position
CR and move girt bar selector lever to ENGAGE position.

CR (9) Release outside emergency T-handle and pull outside
CR handle to its first detent position and release
CR T-handle.

CR (a) Verify that girt bar selector lever has moved from
CR ENGAGE position to DETACH position.

CR NOTE: Operation of outside T-handle past its first
CR detent to its second and third detents moves
CR inside handle and at its third detent, allows
CR door to move up.

C (10) Pull outside T-handle down through its second detent to its third detent (full down position) and release handle.

C (a) Verify that inside T-handle is in its full down position.

C (b) Verify that door is in full open position against overhead bumpers.

C (11) Push outside T-handle up and latch it in stowed position.

C (12) Push inside T-handle up fully to its stowed position and install plastic cover over handle.

C (13) Position girt bar selector lever to ENGAGE and close door.

C (a) Verify girt bar is securely latched in forward and aft floor fittings.

C (14) Reposition girt bar selector lever to DETACH.

C (15) Verify that applicable door warning light on Flight Engineer annunciator panel is operative and out.

C E. Deleted.

F. Operational Test - Manual Close from Inside Aircraft

(1) With door open and door warning light on, verify that evacuation slide selector is in ENGAGE position with girt latches at floor in engaged mode.

R (2) Remove plastic cover from inside PULL DOWN (tee) handle and pull handle to "first detent" and release handle.

(3) Open trim cover for manual drive socket, at forward side of door below girt bar selector panel.

(4) Insert manual drive speed wrench assembly (or 1/2-inch drive speed wrench) in socket and crank door toward the closed position (approximately 200 turns). Stow tee handle after cranking door 1/3 toward closed position then continue cranking until door is closed.

NOTE: If manual drive socket rotates when crank is removed, (up to one revolution in opening direction) check lock pin for freedom of motion (Ref. 52-12-26, Inspection and Check).

(5) Verify that door warning light goes out.

NOTE: If the door is inadvertently closed with the evacuation slide selector lever in the DETACH position, raise the door approximately 18 inches and inspect the girt bar retainer fittings for damage, and verify that breakaway wire is intact (Ref. 25-61-10). Move evacuation slide selector lever to ENGAGE and crank door closed. Repeat Step (5).

(6) Verify that girt bar is engaged in latches at bottom of door.

(7) Replace plastic cover over inside tee handle.

G. Operational Test - Manual Close from Outside Aircraft L1 Door Only

(1) With door open and door warning light on, verify that inside and outside PULL DOWN (tee) handles are both in full-up (stowed) position.

CAUTION: EVACUATION SLIDE SELECTOR MUST BE IN ENGAGE POSITION BEFORE CLOSING DOOR.

(2) Verify that evacuation slide selector is in ENGAGE position.

(3) Remove plastic cover from inside tee handle.

R (4) Pull inside tee handle down to "first detent" position.

(5) Close door as follows:

(a) On inside, forward of door below girt bar selector, open trim cover for manual drive socket and insert 1/2-inch drive speed wrench in socket and crank door down approximately four inches (door track extending down below lock pin or lock pin slot).

R NOTE: If door will not manually drive down, tee handle has been pulled past the "first detent" and actuator clutch is disengaged.
R To engage clutch, push handle back slightly into the "first detent" and then crank door down approximately four inches.

(b) Push tee handle back to stowed position (full up) and re-install plastic cover over handle.

(6) On the outside, forward of door, insert 1/2-inch drive speed wrench in socket and crank door down until closed. Verify that door warning light goes out.

4. Passenger Door Electrical and Mechanical (Hand Crank) Modes Inoperative

NOTE: This closing procedure should be used only when the passenger door is inoperative in both the normal electrical or manual cranking mode (Ref. MMEL Procedures Manual 25-61-10/11/17/19).

A. Closing Procedure

CAUTION: OPENING THE ASSOCIATED PASSENGER DOOR CIRCUIT BREAKER "PASS DOOR ACTUATOR" DEACTIVATES ONLY THE ASSOCIATED DOOR. DO NOT OPEN THE ASSOCIATED "PASS DOOR CONTROL" CIRCUIT BREAKER AS THIS ALSO DISABLES THE OPPOSITE SIDE DOOR.

(1) On galley left circuit breaker panel, zone 131, open and tag applicable circuit breakers PASS DOOR ACTUATOR and PASS DOOR CONTROL.

(2) Remove plastic cover from emergency PULL DOWN (tee) handle and pull handle all the way down. (This releases the door actuator clutch and retracts the lock pin from the door track.)

(3) Gain access to counterbalance through sidewall storage cabinet aft of door.

(4) Engage loader/unloader worm gear to counterbalance ballscrew by rotating Socket A in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(5) Crank door down by rotating socket B on the loader/unloader until door closes completely(rotate socket B clockwise for lefthand doors, counterclockwise for righthand doors).

WARNING: DO NOT DISENGAGE WORM SHAFT FROM WORM GEAR.

(6) Push tee handle back to stowed position (full up). (This inserts lock pin in the door track.) Reinstall plastic cover over handle.

(7) Verify that lock pin is properly engaged in the door track in accordance with 52-12-26, Inspection and Check, Paragraph 3B.

(8) Placard door controls.

WARNING: AFTER REPAIR OR REPLACEMENT OF ACTIVATOR, DO NOT ATTEMPT ELECTRICAL ACTUATION OF DOOR UNTIL WORM SHAFT IS DISENGAGED FROM WORM GEAR.

(9) Make appropriate entry in airplane log book.

PASSENGER DOOR ACTUATOR - REMOVAL AND INSTALLATION

1. General

The actuators are located above and forward of each passenger door. The removal and installation procedures for all the door actuators are the same.

NOTE: If failure of an actuator resulted in rapid undamped opening of a passenger door, the up-stop bumpers and adjacent structure should be checked for damage.

2. Equipment and Materials

Rigpin, PN B994, or equivalent

Protective caps

Lock-wire, Fed Spec QQ-W-390, 0.032 inch diameter, or equivalent

3. Referenced Procedures

	12-22-41	Doors Lubrication
	25-26-01	Ceiling Trim Forward Drop Panel - Removal and Installation
R R	25-26-04	Ceiling Panel, L1 and R1 Door - Removal and Installation
R	25-26-08	Passenger Entry Shroud and Trim - Removal and Installation
	52-12-00	Door Actuation System - Adjustment and Test
	52-12-19	Passenger Door Closed Limit Switch - Removal and Installation
	52-12-24	Door Handle - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Door may be in any position between open and closed.

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(2) On galley left circuit breaker panel zone 131, open and tag circuit breaker PASS DOOR ACTUATOR for applicable door actuator (Ref. 52-12-00, Adjustment and Test, Table 501).

(3) Tag electrical and manual door controls.

(4) Gain access to applicable actuator as follows:

(a) At L/R1 doors, actuator is accessible through lower ceiling panel inboard of door (Ref. 25-26-01 and 25-26-04).

(b) At L/R2 doors, actuator is accessible through sidewall storage cabinet forward of door.

(c) At L/R3 doors, actuator is accessible through sidewall storage cabinet forward of door. (Ref. 25-26-01 and 25-26-08).

(d) When actuator must be replaced with door full open and access for ceiling trim removal through flipper door is not possible, removal of hinge pins may be accomplished by reaching between trim in flipper door area and door slide pack with long screwdriver, or by removing oxygen module over attendants seat and reaching up between door and trim panel.

(5) Disconnect electrical connector from actuator (Ref. Fig. 401). Install protective cap.

WARNING: LOCK COUNTERBALANCE BEFORE REMOVING ACTUATOR.

(6) Lock counterbalance by rotating socket A in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(7) Pull manual control PULL handle to fully extended position and verify that door does not move up.

(8) Push handle to fully closed position.

(9) Disconnect manual drive flexible shaft coupling from actuator. Install protective cap.

(10) Remove actuator emergency brake release cam rod end from crank.

(11) Remove rod end from actuator emergency brake release cam. Install protective cap on cam.

(12) Reinstall rod end on crank.

NOTE: Ensure bearing is retained with rod end for re-use.

(13) Remove crank from support.

(14) Remove support from actuator as follows:

(a) Identify position of support attachment bolts on actuator flange (forward or aft pair of holes) and retain information for locating support on reinstallation.

(b) Remove support bolts and nuts.

(15) Reinstall bolts and nuts in support.

(16) Reinstall crank on support.

NOTE: All attaching parts to actuator are secured for use when reinstalling actuator.

(17) Remove actuator from gearbox.

NOTE: If spline is removed with actuator, remove spline from actuator and reinstall in gearbox.

B. Installation

(1) Verify that:

(a) Circuit breaker opened in Step 4A(2) is open and tagged.

(b) Electrical and manual door controls are tagged.

(c) Counterbalance is in lock position.

(d) Mounting surfaces and teeth on gearbox spline are clean.

(e) Spline is lubricated (Ref. 12-22-41) and installed in gearbox.

(f) Protective caps are removed from electrical connector and both ends of actuator cam.

(2) Remove rigpin from actuator if installed.

(3) Pull actuator emergency brake release cam to declutch actuator.

(4) Engage actuator on gearbox spline and align mounting holes; align limit switch bracket with actuator mounting hole and install bolts, washers, and nuts (Ref. Fig. 401).

(5) Verify door closed limit switch is properly rigged (Ref. 52-12-19).

(6) Push actuator emergency brake release cam into actuator as required to align rigpin holes and install rigpin.

NOTE: Install rigpin in the actuator cam located next to the flange that the support fitting will be attached to. Use of this rigpin provides for basic actuator adjustment only. For complete rigging adjustment of actuator/door handle control, after actuator installation is complete, refer to 52-12-24, Adjustment and Test.

(7) Remove crank from support.

(8) Install support on actuator in position identified in Step 4A(14), or as shown in Fig. 401, with bolts, washers, and nuts.

(9) Install crank on support with bolt, washers, and nut.

(10) Install locknut and rod end on actuator emergency brake release cam. Verify that rod end is threaded on cam far enough to block inspection hole and that locknut is at least 0.03 inch from actuator. Lock-wire nut to rod end.

CAUTION: ENSURE BEARING IS INSTALLED IN ROD END.

(11) Install rod end on crank with bearing, washers, bolt and nut.

(12) Connect manual drive flexible shaft to actuator. Lock-wire fitting.

(13) Connect electrical connector to actuator.

(14) Unlock counterbalance as follows:

(a) Rotate socket B counterclockwise for left doors and clockwise for right doors until backlash is noted.

(b) Torque socket A in UNLOCK direction until socket B is in UNLOCK position and rotates freely.

(15) Remove rigpin from actuator.

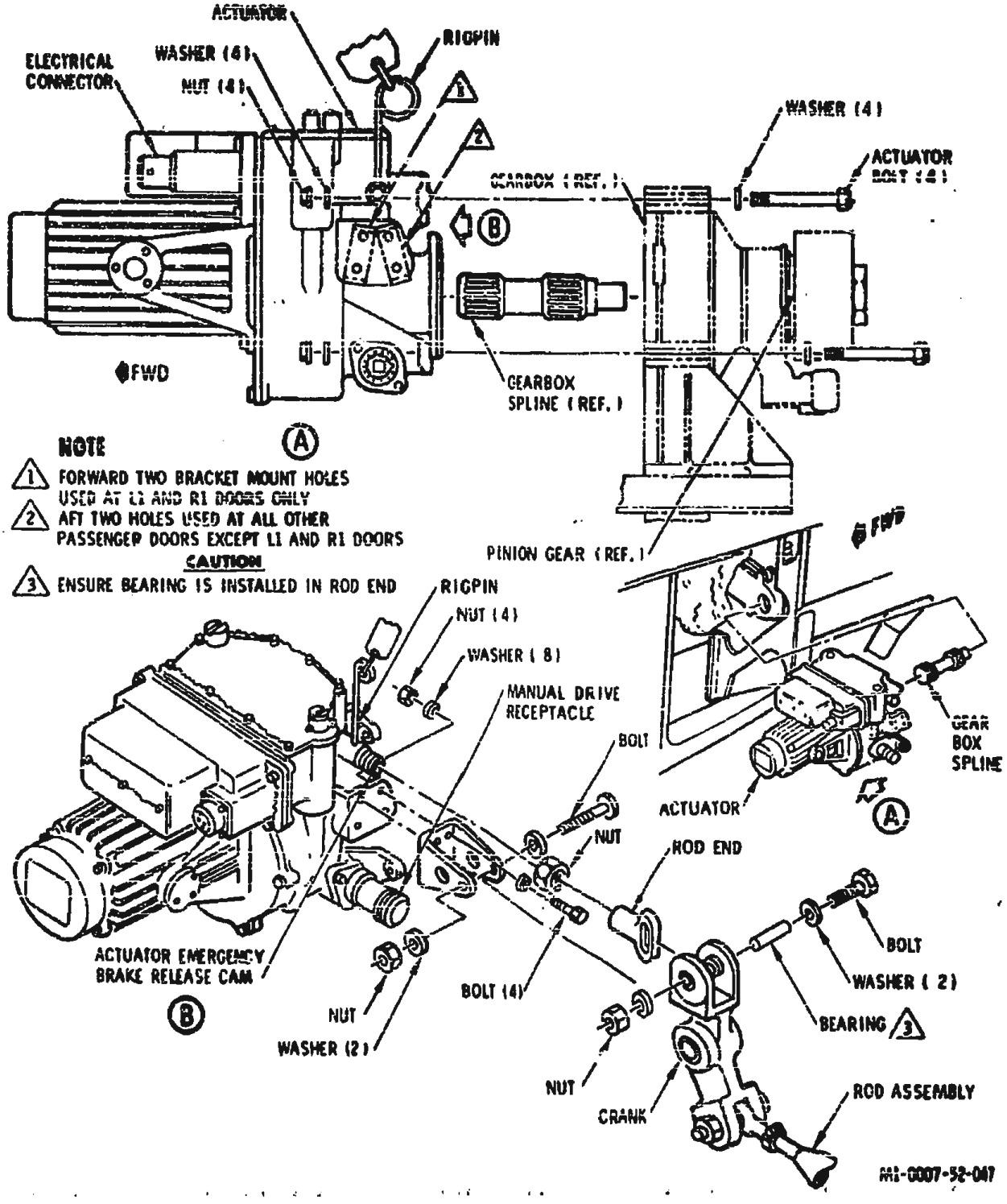
(16) Check actuator emergency brake release cam adjustment (Ref. 52-12-24, Adjustment and Test, "Door Handle Control System - Rigging" paragraph), and readjust cam if necessary.

(17) Remove tags from electrical and manual door controls.

(18) Remove tag and close circuit breaker opened in Step 4A(2).

(19) Verify door operation (Ref. 52-12-00).

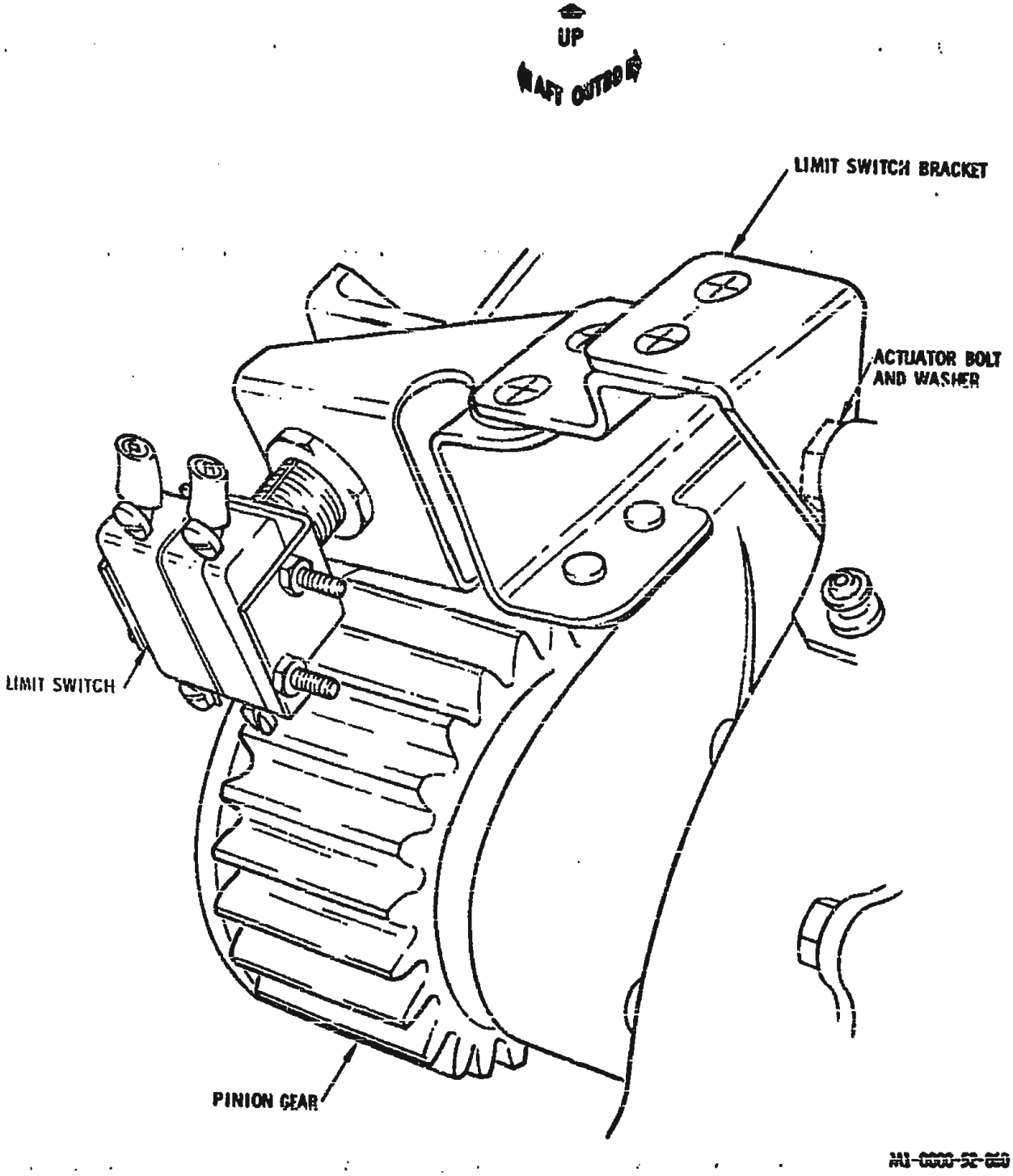
R (20) Replace ceiling panel if required (Ref. 25-26-01,
R 25-26-04 and 25-26-08).



R Passenger Door Actuator - Removal and Installation
R Figure 401 (Sheet 1)

EFFECTIVITY: ALL

001B



R Passenger Door Actuator - Removal and Installation
R Figure 401 (Sheet 2)

PASSENGER DOOR COUNTERBALANCE - REMOVAL AND INSTALLATION

1. General

The counterbalances are located above and aft of each passenger door. The removal and installation procedures for all counterbalances are the same. However, gear box spline clearance must be verified on left side installations only.

2. Equipment and Materials

Rigpin, PN B994, or equivalent

Butter Lube Grease, MIL-G-23827A, or equivalent

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Straightedge Scales, 12 inch and 6 inch

Vernier Caliper, or 4-5 inch micrometer

Depth micrometer

3. Referenced Procedures

25-26-01	Ceiling Trim Forward Drop Panel - Removal and Installation
25-61-10	Emergency Escape Slide/Raft Assembly - Removal and Installation
52-12-00	Door Actuation System - Adjustment and Test
52-12-04	Passenger Door Cross-Drive Gearbox - Removal and Installation

4. Removal/Installation

A. Removal

WARNING: AFTER REPAIR OR REPLACEMENT OF ACTUATOR OR COUNTERBALANCE, DO NOT ATTEMPT ELECTRICAL ACTUATION OF DOOR UNTIL WORM SHAFT IS DISENGAGED FROM WORM GEAR ON COUNTERBALANCE LOAD UNIT.

DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

NOTE: Door may be in any position between open and closed when removing a counterbalance, but if possible, place door in the full open position to unload counterbalance.

(1) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breakers PASS DOOR ACTUATOR and PASS DOOR CONTROL (Ref. 52-12-00, Adjustment and Test, Table 501).

(2) Tag electrical and manual door controls located forward of each passenger door.

(3) Gain access to counterbalance through sidewall storage cabinet aft of door.

(4) Lock counterbalance by rotating socket A (Ref. Figure 402) in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear. If counterbalance cannot be locked, replace load/unload assembly (Ref. Para. 4E).

(5) Pull manual control T handle to down position.

(6) After socket B is fully positioned in the lock position, attempt to manually drive the door, using socket B, into a closed position. If the socket turns and the door does not move, the counterbalance load/unload assembly has failed and must be replaced prior to removal of counterbalance (Ref. Para. 4E). If counterbalance assembly can not be locked with load/unload assembly then accomplish Paragraph 4D, removal of counterbalance assembly that can not be locked with load/unload assembly.

(7) Push handle to closed position.

(8) Gain access to applicable actuator as follows:

(a) At L1 and R1 doors, actuator is accessible through lower ceiling panel inboard of door (Ref. 25-26-01).

(b) At L/R2 doors, actuator is accessible through sidewall storage cabinet forward of door.

(c) At L/R3 doors, actuator is accessible through sidewall storage cabinet forward of door.

(9) Install rigpin in actuator (Ref. Fig. 402).

WARNING: COUNTERBALANCE IS A COMPRESSION SPRING ENERGY-STORING DEVICE.

HANDLE WITH CARE; COUNTERBALANCE WEIGHS APPROXIMATELY 50 POUNDS.

IF COUNTERBALANCE IS DAMAGED PROCEED WITH EXTREME CAUTION.

WARNING: LOCK COUNTERBALANCE WITH LOAD/UNLOAD ASSEMBLY BEFORE REMOVAL. IF LOAD/UNLOAD ASSEMBLY IS DAMAGED, REPLACE BEFORE REMOVING COUNTERBALANCE.

(10) Prior to removal of counterbalance, inspect gearbox, pinion gear and counterbalance for evidence of damage and broken tie-rods.

(a) If no damage is evident, remove four bolts to separate counterbalance from gearbox.

(b) If damage exists to the gearbox or pinion gear, lock counterbalance and separate counterbalance from gearbox by loosening the four attaching bolts. Remove counterbalance then remove gearbox.

(c) If damage exists to counterbalance, lock counterbalance and separate counterbalance from gearbox by loosening the four attaching bolts. The gearbox need not be removed.

(d) Upon removal of the damaged counterbalance, take action to contain the spring load with external endplates and tie-rods, as an added precaution, if either of the following conditions exist:

- Endplates badly cracked but ballscrew not completely ejected and still bearing load.

- Less than four tie-rods intact and all on one side.

NOTE: If spline is removed with counterbalance, remove spline from counterbalance and reinstall in gearbox.

WARNING: THE COUNTERBALANCE IS AN ENERGY STORING DEVICE. REMOVING PRELOAD WILL SOMEWHAT REDUCE THE HAZARD OF HANDLING A REMOVED COUNTERBALANCE. SIGNIFICANT DANGER STILL EXISTS IF COUNTERBALANCE IS MISHANDLED.

CAUTION: WHEN REMOVING PRELOAD FROM COUNTERBALANCE, DO NOT TURN PAST ZERO PRELOAD POINT. DO NOT USE POWER TOOLS.

(11) Using a 3/8-inch square drive wrench in manual input socket B, turn socket the approximate number of turns as shown in Table 401. Zero preload is confirmed by the following:

(a) Indicator in window C stops moving.

(b) Backlash is noted in socket B.

(c) There is a slight rotation of load/unload assembly with respect to counterbalance.

Counterbalance Preload Removal
Table 401

DOOR COUNTERBALANCE	TORQUE DIRECTION	NUMBER OF REVOLUTIONS
L1	Counterclockwise	78
R1	Clockwise	168
L2	Counterclockwise	266
R2	Clockwise	266
L3	Counterclockwise	266
R3	Clockwise	266

B. Spline - Clearance Verification

Prior to reinstallation of new or different counterbalance, spline, or gearbox on left side of aircraft (lefthand configuration), spline end clearance must be verified by the following procedure. This procedure is necessary on left side passenger door installations only.

WARNING: NON-ADHERENCE TO FOLLOWING SPLINE - CLEARANCE VERIFICATION PROCEDURE COULD RESULT IN COUNTERBALANCE FAILURE DUE TO IMPROPER RIGGING. A FAILED COUNTERBALANCE CAN BE EXTREMELY DANGEROUS, AND EXTREME CAUTION MUST BE EXERCISED TO AVOID INJURY.

(1) Withdraw spline from gearbox (if installed) and measure and record its entire length (Dimension "d")(Ref. Fig. 401).

NOTE: All measurements should be to nearest 0.002 inch.

(2) Measure and record depth of spline well in gearbox (socket into which gearbox end of spline is installed) as follows:

(a) Place straightedge against large flat mounting surface of gearbox, crossing over well opening (Ref. Fig. 401).

(b) Measure from straightedge down to "shoulder" at bottom of well, avoiding opening at center bottom of well. (Dimension "e")(Ref. Fig. 401).

(3) Measurement of "effective" depth of spline well in counterbalance involves three steps as follows:

(a) Measure and record depth of well from large slotted bolt end at base of well to well lip. (Dimension "a")(Ref. Fig. 401).

(b) Place straightedge across well lip extending out over one of the mounting-bolt seat-faces on end-plate of counterbalance. Measure clearance from straightedge to mounting-bolt seat face. (Dimension "b")(Ref. Fig. 401).

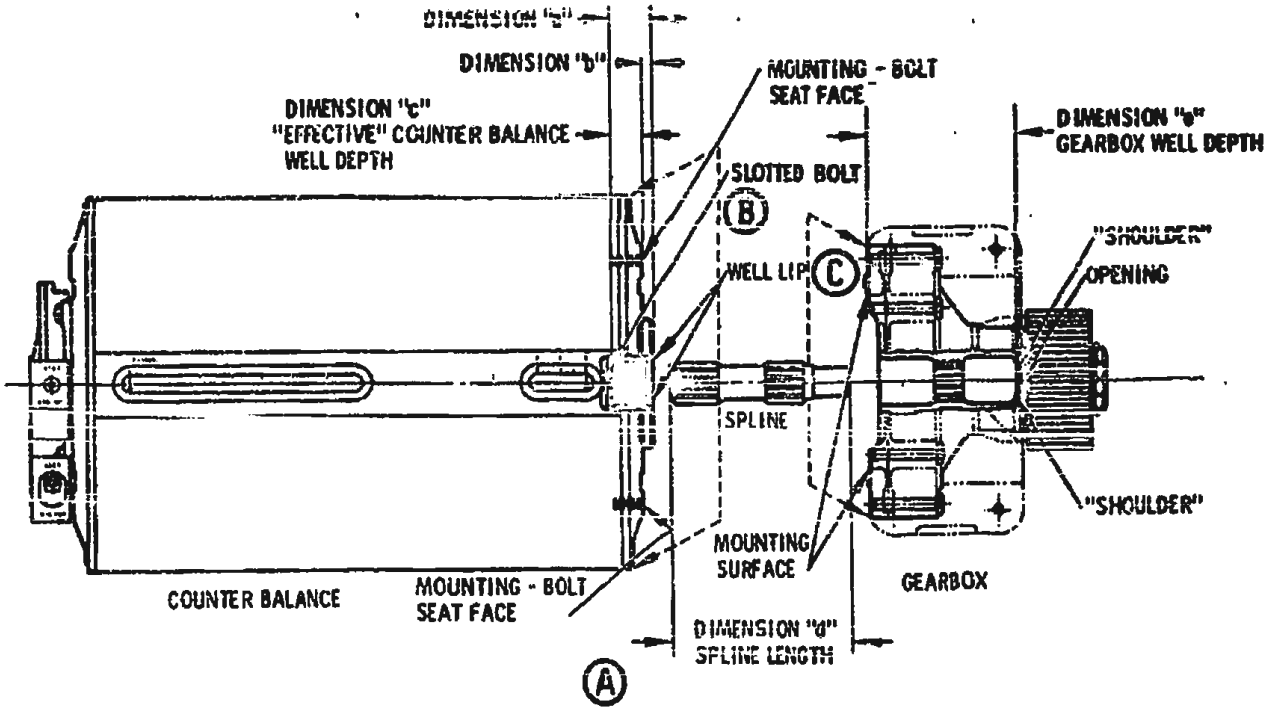
(c) Subtract straightedge to face clearance from the total well depth measurement to arrive at "effective" well depth (Dimension "c") (Ref. Fig. 401).

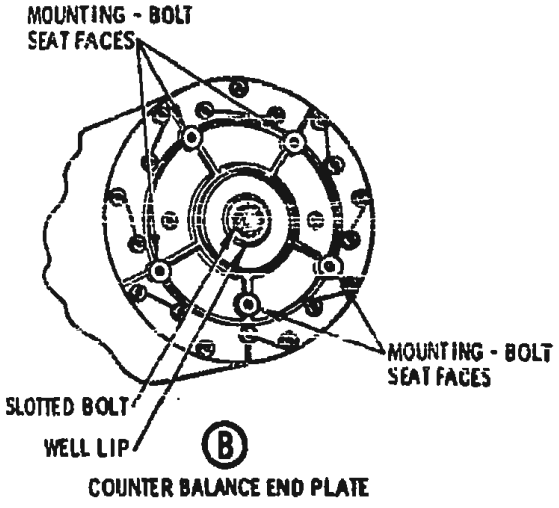
(4) The total of the gearbox well depth (Dimension "e") and the "effective" counterbalance well depth (Dimension "c") should be a minimum of 0.010 inch greater than the spline length measurement (Dimension "d")(Ref. Fig. 401).

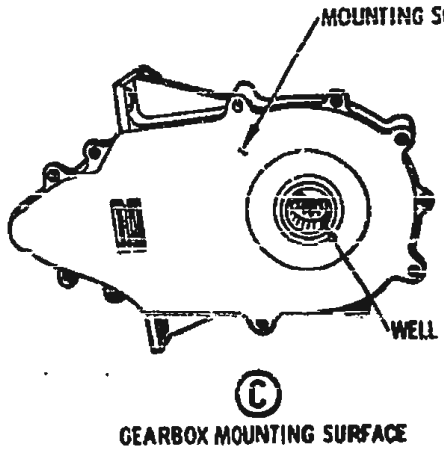
WARNING: ATTEMPT TO MOUNT COUNTERBALANCE WITH GEARBOX SPLINE LACKING THE MINIMUM CLEARANCE OF 0.010 INCH CAN RESULT IN DANGEROUS COUNTERBALANCE FAILURE.

(5) If assembly lacks minimum clearance, determine which component is out of tolerance by comparing measured dimensions to manufacturers specified dimensions (Ref. Fig. 401).

(6) Replace out-of-tolerance component and repeat spline clearance verification prior to installation. (Ref. Para. 4B).







SPLINE-CLEARANCE VERIFICATION
DIMENSION "c" = DIMENSION "a" - DIMENSION "b"
(DIMENSION "c" + DIMENSION "e") - DIMENSION "d" = 0.010 INCH MINIMUM

MANUFACTURERS SPECIFIED DIMENSIONS
DIMENSION "c" = 0.93 ± 0.06 INCH
DIMENSION "e" = 3.57 ± 0.03 INCHES
DIMENSION "d" = 4.395 ± 0.005 INCHES

M1-0000-52-73A

Spline Clearance Verification
Figure 401

C. Installation

CAUTION: IF A COUNTERBALANCE, PN 672013-117, IS TO BE INSTALLED ON RIGHT SIDE OF AIRCRAFT, A SPLINE ASSEMBLY PN 1537749-105 (COLOR CODED YELLOW AT END) MUST BE USED. WHEN PN 672013-117 IS TO BE INSTALLED ON LEFT SIDE OF AIRCRAFT, USE SPLINE ASSEMBLY PN 1537749-101. ALL OTHER COUNTERBALANCES USE SPLINE ASSEMBLY PN 1537749-101 ON LEFT OR RIGHT SIDE POSITION.

WARNING: VERIFY GEARBOX SPLINE CLEARANCE BEFORE REINSTALLING COUNTERBALANCE ON LEFT SIDE OF AIRCRAFT (LEFTHAND CONFIGURATION) (REF. PARA. 4B).

(1) Verify that:

(a) Door is in open position against upper bumpers.

(b) Circuit breakers opened in Step 4A(1) are open and tagged.

(c) Electrical and manual door controls are tagged.

(d) Rigpin is installed in actuator.

(e) Mounting surfaces and teeth on aft gearbox spline are clean.

(f) Spline is butter-lubed with grease and installed in gearbox.

(2) Check that load/unload assembly is assembled to correct end of counterbalance. For left side installation, load/unload assembly must be at end of counterbalance with long window (window C). Do not use short window scale indications as an adjustment indicator. For right side installation, load/unload assembly must be at end of counterbalance with short window. To change assembly from one end of counterbalance to other end, perform following steps:

CAUTION: WHEN ROTATING SOCKET B, DO NOT TORQUE BEYOND POINT WHERE INDICATOR IN WINDOW C STOPS MOVING AND BACKLASH IS NOTED.

DO NOT USE SHORT WINDOW SCALE INDICATIONS AS AN ADJUSTMENT INDICATOR.

(a) If counterbalance is to be changed from a left side configuration to a right side configuration, unlock counterbalance by rotating socket B

counterclockwise until indicator in window C moves toward end of counterbalance and backlash is noted. Rotate socket B clockwise when changing from right side configuration to left side configuration.

(b) Remove screws, sleeves, washers, and wave springs holding load/unload assembly to counterbalance.

(c) Remove load/unload assembly and position at other end of counterbalance, aligning socket A with center of window C (Ref. Fig. 402).

(d) At each location, use one washer between counterbalance assembly and top mounting lug of load/unload assembly.

(e) Insert sleeves in top lugs of load/unload assembly.

(f) Install load/unload assembly with wave springs, washers and screws.

NOTE: With screws and sleeves tight, load/unload unit should rotate with an applied torque of 2 to 12 pound-inches.

(3) LOCK counterbalance by rotating socket A in LOCK direction until Socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(4) Rotate socket B clockwise at left door (counterclockwise at right door) until indicator in window C is at 0 position.

CAUTION: DO NOT TORQUE SOCKET B MORE THAN 30 POUND-INCHES. EXCESSIVE TORQUE INDICATES POSSIBLE COUNTERBALANCE DAMAGE. REMOVE AND REPLACE COUNTERBALANCE.

(5) Rotate socket B as specified in Table 402 to adjust initial counterbalance load.

NOTE: Socket B requires only 20 to 30 pound-inches to rotate.

Counterbalance Torque Adjustment
Table 402

DOOR COUNTERBALANCE	TORQUE DIRECTION	NUMBER OF REVOLUTIONS
L1	Clockwise	78
R1	Counterclockwise	168
L2	Clockwise	266
R2	Counterclockwise	266
L3	Clockwise	266
R3	Counterclockwise	266

WARNING: COUNTERBALANCE IS A COMPRESSION SPRING ENERGY-STORING DEVICE. HANDLE WITH CARE; COUNTERBALANCE WEIGHS APPROXIMATELY 50 POUNDS.

(6) Install counterbalance so that mounting holes align as closely as possible with mating holes in aft gearbox.

(7) Rotate socket B in direction of closing door to complete final alignment of mounting holes. If more than four revolutions of socket B are required to align holes, reindex counterbalance.

WARNING: ATTEMPT TO CLOSE ANY EXISTING GAP BETWEEN LOAD UNIT MOUNTING SURFACE AND COUNTERBALANCE MOUNTING BOLT SEAT FACES BY TORQUING MOUNTING BOLTS CAN RESULT IN DANGEROUS LOAD UNIT FAILURE.

(8) On left side doors only, verify flush mating of counterbalance mounting bolt seat faces with gearbox mounting surface prior to installing mounting bolts. If any gap is noted, do not attempt to close gap by torquing mounting bolts. Repeat spline-clearance verification procedure in Paragraph 4B.

(9) Install and lock-wire counterbalance mounting bolts.

WARNING: AFTER REPAIR OR REPLACEMENT OF ACTUATOR OR COUNTERBALANCE, DO NOT ATTEMPT ELECTRICAL ACTUATION OF DOOR UNTIL WORM SHAFT IS DISENGAGED FROM WORM GEAR ON COUNTERBALANCE LOAD UNIT.

CAUTION: WHEN ROTATING SOCKET B, DO NOT TORQUE BEYOND POINT WHERE INDICATOR IN WINDOW C STOPS MOVING AND BACKLASH IS NOTED.

(10) Unlock counterbalance as follows:

(a) Rotate socket B counterclockwise for left doors and clockwise for right doors until backlash is noted.

(b) Torque socket A in UNLOCK direction until socket B is in UNLOCK position and rotates freely.

(10) If counterbalance configuration was changed in accordance with Step 4C(2), tighten and lock-wire load/unload assembly mounting screws.

NOTE: Load/unload unit must be able to be rotated on mount lugs after tightening with an applied torque of 2 to 12 pound-inches.

(12) Remove rigpin from actuator.

(13) Remove tags from electrical and manual door controls.

(14) Remove tag and close circuit breakers opened in Step 4A(1).

(15) Verify door operation (Ref. 52-12-00).

(16) Replace ceiling panel if required (Ref. 25-26-01).

D. Removal of Counterbalance Assembly That Can Not be Locked with Load/Unload Assembly.

(1) Remove slide/raft container from door (Ref. 25-61-10).

(2) Operate door to the open position.

WARNING: ENSURE DOOR IS SECURELY SUPPORTED.

(3) Securely support door in the open position.

CAUTION: ENSURE MANUAL CONTROL T HANDLE IS IN THE FULL UP POSITION.

(4) With manual drive, turning in the down direction, unload both pinion gears.

(5) While maintaining load on manual drive, remove the actuator and counterbalance gearbox pinion gears (Ref. 52-12-04).

(6) Unload preload of counterbalance with manual drive, by turning in the up direction.

(7) Remove two of the four bolts connecting the gear box to the counterbalance.

(8) When removing the remaining two, there should be no resistance. If there is, recheck to see that all preload is removed from counterbalance.

(9) Remove counterbalance assembly.

(10) Reinstall pinion gears (Ref. 52-12-04).

(11) Reinstall slide/raft container (Ref. 25-61-10).

(12) Remove support from door.

E. Removal and Installation of Counterbalance Load/Unload Assembly.

(1) Remove screws, sleeves, washers, and wave springs holding load/unload assembly to counterbalance, and remove assembly.

(2) Install new load/unload assembly on counterbalance as follows (Ref. Fig. 402):

NOTE: Install load/unload assembly in the unlock position.

(a) Align socket A on load/unload assembly with center of window C on counterbalance assembly.

(b) At each attach location, use one washer between counterbalance assembly and top mounting lug of load/unload assembly.

(c) Insert sleeves in top lugs of load/unload assembly.

(d) Install load/unload assembly with wave springs, washers and screws.

NOTE: With screws and sleeves tight, load/unload unit should rotate with an applied torque of 2 to 12 pound-inches.

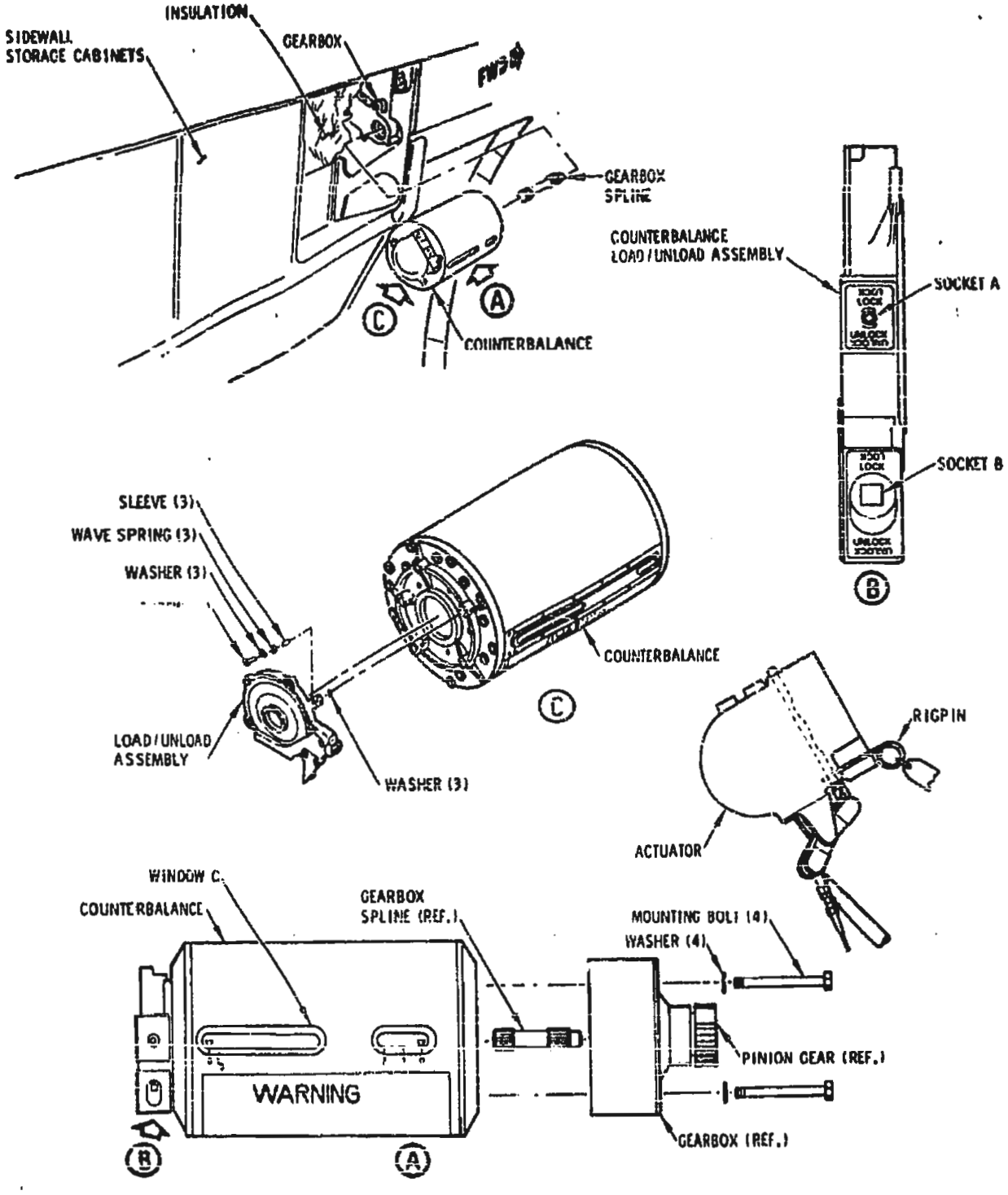
CAUTION: LOAD/UNLOAD ASSEMBLY SHOULD BE UNLOCKED BEFORE OPERATING DOOR.

(3) Verify operation as follows:

(a) Lock counterbalance by rotating socket A in Lock direction until socket B is in Lock position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(b) Pull manual control T handle to down position.

(c) After socket is fully positioned in the Lock position, attempt to manually drive the door, using socket B, towards the closed position. If the socket turns and the door does not move, then a failed counterbalance is suspect. Remove counterbalance in accordance with Paragraph 4D.



Counterbalance - Removal and Installation
Figure 402

R
R
001B

EFFECTIVITY: ALL

CR PASSENGER DOOR CROSS-DRIVE GEARBOX - REMOVAL AND INSTALLATION

CR 1. General

CR Cross-drive gearboxes are located at the forward side and aft
CR side above each passenger door. The removal procedures for each
CR of the gearboxes are the same. The installation procedures for
CR the forward gearboxes differ from the procedures for the aft
CR gearboxes as shown in Paragraphs 4B and 4C.

CR 2. Equipment and Materials

CR Sealing Compound, LAC Spec C-40-769, Type II or equivalent

CR Gear puller, PN GEN 3154

CR Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

CR Protective caps

CR 3. Referenced Procedures

CR	12-22-41	Doors Lubrication
CR	20-51-04	Environmental Sealing of L-1011 Aircraft
CR CR	25-26-08	Passenger Entry Shroud and Trim - Removal and Installation
CR CR	25-61-04	Double Slide Door-mounted Container - Removal and Installation
CR	52-12-00	Door Actuation System - Adjustment and Test
CR	52-12-01	Actuator - Removal and Installation
CR	52-12-03	Counterbalance - Removal and Installation
CR	52-13-01	Door Lining - Removal and Installation

CR 4. Removal/Installation

CR A. Removal

CR (1) Remove doorway trim (Ref. 25-26-08).

CR (2) Open door approximately 3 inches (Ref. 52-12-00).

CR (3) Remove emergency slide container (Ref. 25-61-04).

CR (4) Remove door lining (Ref. 52-13-01).

CR (5) If forward gearbox is to be removed, remove actuator
CR (Ref. 52-12-01).

CR If aft gearbox is to be removed, remove counterbalance
CR (Ref. 52-12-03) and lower door to closed position.

CR (6) Secure both door tracks against door track guides using
CR C-clamps at No. 1 and No. 3 guides.

CR (7) Remove gearbox spline (Ref. Fig. 401).

CR (8) Disconnect cross-drive flexible shaft from gearbox
CR (Ref. Fig. 401). Install protective caps on shaft and
CR gearbox couplings.

CR (9) Bend down lockwasher tabs at pinion retaining bolt.

CR (10) Remove pinion retaining bolt, washer, and track guide
CR plate.

CR (11) Use gear puller to remove pinion gear. Install
CR protective cap on pinion gear spline.

CR (12) Remove gearbox mounting bolts and washers.

CR (13) Move gearbox away from door track until cam followers
CR on gearbox clear track. Remove gearbox.

CR B. Installation of Forward Gearbox

CR (1) Verify that all protective caps are removed and gearbox
CR mounting surfaces are clean.

CR (2) Install gearbox so that three cam-followers fit inside
CR door track (Ref. Fig. 401).

CR (3) Apply sealing compound to mounting bolts (Ref.
CR 20-51-04).

CR (4) Wet-install mounting bolts (Ref. 20-51-04).

CR (5) Install pinion gear, track guide plate, and new
CR lockwasher.

CR (6) Install pinion retaining bolt and torque 200 to 300 lb
CR in.

CR (7) Bend up at least two lockwasher tabs next to flat sides CR of bolt head.

CR (8) Lubricate (Ref. 12-22-41) and install gearbox spline in CR gearbox.

CR (9) Install actuator (Ref. 52-12-01).

CR (10) Remove C-clamps.

CR CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST LINE CR UP WITH FEMALE SOCKET ON GEARBOX. DO NOT USE CR COUPLING NUT TO FORCE ENGAGEMENT.

CR IF MALE END OF SHAFT WILL NOT ENGAGE WITH SOCKET, CR RAISE FORWARD TRACK MINIMUM ADDITIONAL DISTANCE CR REQUIRED TO ALLOW ENGAGEMENT.

CR (11) Connect cross-drive flexible shaft to gearbox. Tighten CR coupling nut finger-tight and lock-wire nut to gearbox.

CR (12) Verify door operation (Ref. 52-12-00).

CR (13) Replace door lining (Ref. 52-13-01).

CR (14) Replace emergency slide container (Ref. 25-61-04).

CR (15) Replace doorway trim (Ref. 25-26-08).

CR C. Installation of Aft Gearbox

CR (1) Verify that all protective caps are removed and gearbox CR mounting surfaces are clean.

CR (2) Install gearbox so that three cam-followers fit inside CR door track (Ref. Fig. 401).

CR (3) Apply sealing compound to mounting bolts (Ref. CR 20-51-04).

CR (4) Wet-install mounting bolts (Ref. 20-51-04).

CR (5) Install pinion gear, track guide plate, and new CR lockwasher.

CR (6) Install pinion retaining bolt and torque 200 to 300 CR lb-in.

CR (7) Bend up at least two lockwasher tabs next to flat sides CR of bolt head.

CR CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST LINE UP WITH FEMALE SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT.

CR IF MALE END OF SHAFT WILL NOT ENGAGE WITH SOCKET, REMOVE C-CLAMPS FROM FORWARD TRACK AND RAISE FORWARD TRACK MINIMUM ADDITIONAL DISTANCE TO ALLOW ENGAGEMENT.

CR (8) Connect shaft to gearbox. Tighten coupling nut finger-tight and lock-wire nut to gearbox.

CR (9) Remove C-clamps.

CR (10) Manually raise door until contact is made with upper bumpers (Ref. 52-12-00).

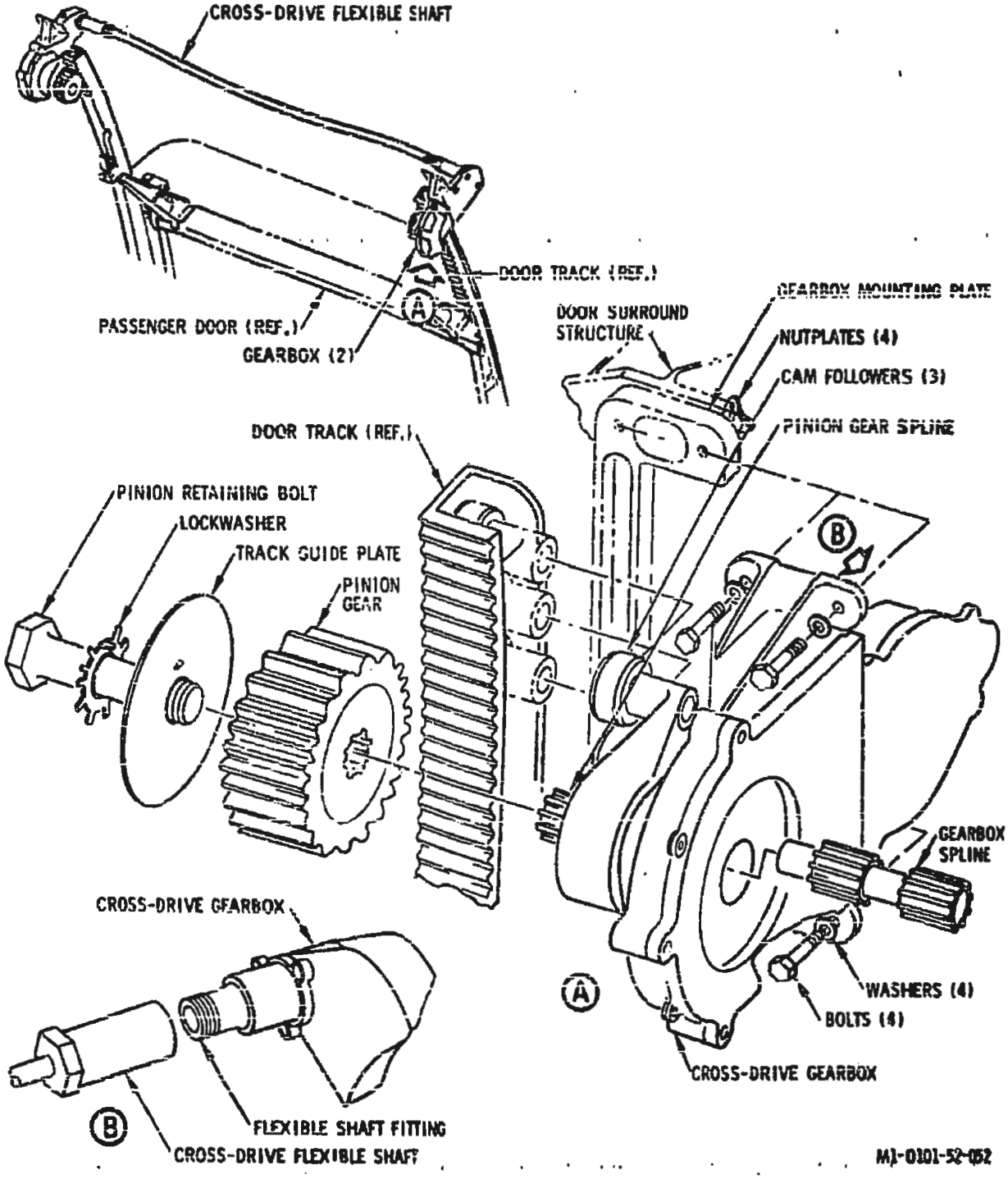
CR (11) Install counterbalance (Ref. 52-12-03).

CR (12) Verify door operation (Ref. 52-12-00).

CR (13) Replace door lining (Ref. 52-13-01).

CR (14) Replace emergency slide container (Ref. 25-61-04).

CR (15) Replace doorway trim (Ref. 25-26-08).



CR
CR

Cross-drive Gearbox - Removal and Installation
Figure 401

EFFECTIVITY: ALL

002B

PASSENGER DOOR CROSS-DRIVE FLEXIBLE SHAFT - REMOVAL AND INSTALLATION

1. General

A cross-drive flexible shaft is located over each passenger entry door. The cross-drive flexible shafts interconnect the cross-drive gearboxes on each side of the door. Removal and installation procedures for the cross-drive flexible shaft are the same for all passenger entry doors.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Cotterpin, MS 24665-149

3. Referenced Procedures

25-26-01 Forward, Mid and Aft Ceiling Trim Drop Panels - Removal and Installation

52-12-00 Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Close passenger door.

WARNING: DO NOT OPERATE DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

(2) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breakers PASS DOOR ACTUATOR and CONTROL (Ref. 52-12-00, Table 501). R

(3) Tag electrical and manual door controls.

(4) Gain access to cross-drive shaft by lowering ceiling panel above applicable door (Ref. 25-26-01).

(5) Gain access to counterbalance, aft of door, and lock as follows (Ref. Fig. 401):

WARNING: LOCK COUNTERBALANCE BEFORE DISCONNECTING CROSS-DRIVE FLEXIBLE SHAFT.

(a) Lock counterbalance by rotating socket A in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(6) Disconnect uplock-downlock control cable rod end from lock mechanism bellcrank by removing cotterpin, flathead pin and washers.

(7) Place evacuation slide selector lever in DETACH position.

(8) Relieve residual power on cross-drive shaft by pulling emergency handle fully inboard.

(9) Push emergency handle back to full-in (stowed) position, and replace plastic cover over inside emergency handle.

(10) Unscrew flexible shaft coupling nuts at cross-drive gearboxes.

(11) Remove flexible shaft support clamps and remove flexible shaft.

B. Installation

(1) Verify the following:

(a) Door closed

(b) Circuit breaker [Ref. Step 4A(2)] closed and tagged

(c) Electrical and manual controls tagged

(d) Counterbalance socket B in LOCK position

(2) Remove door trim, forward lower side, for access to bottom of door forward track and track stop bumper.

(3) Raise forward track 0.100 (±0.020) inch using manual drive.

(4) Install aft end of flexible drive shaft and tighten coupling nut finger tight.

R CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST BE

ALIGNED WITH SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT OF THREADS. IF MALE END OF CROSS-DRIVE SHAFT WILL NOT ENGAGE WITH SOCKET, RAISE FORWARD TRACK MINIMUM ADDITIONAL DISTANCE TO ALLOW ENGAGEMENT.

(5) Connect forward cross-drive flexible shaft to gearbox. If square end of flexible shaft will not engage in gearbox, continue to raise forward track the minimum amount required to engage with gearbox. Tighten coupling nut fingertight.

(6) Lock-wire forward and aft coupling nuts to bolt heads on adjacent structure.

(7) Install flexible shaft support clamps.

(8) Connect uplock-downlock control cable rod end to lock mechanism bellcrank using flathead pin, washers, and cotterpin.

(9) Verify that inside emergency control handle is stowed.

(10) Unlock counterbalance as follows:

(a) Turn socket B counterclockwise for left doors, or clockwise for right doors until backlash is noted.

(b) Turn socket A in UNLOCK direction until socket B is in UNLOCK position and rotates freely.

(11) Remove tag and close circuit breakers opened in Step 4A(2).

(12) Remove electrical and manual door control tags.

(13) Perform Operational Test Electrical Mode from Inside Aircraft (Ref. 52-12-00). Repeat open/close cycle four times to verify proper operation of door.

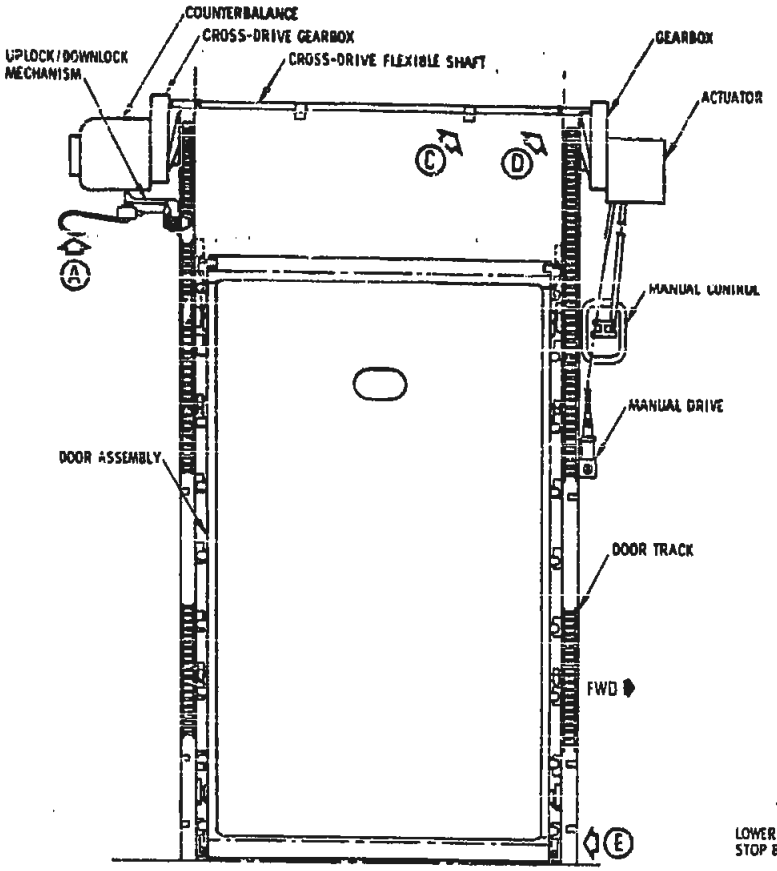
(14) Perform Operational Test - Emergency Mode from Inside Aircraft (Ref. 52-12-00).

R CAUTION: IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN DEPLOYMENT OF EVACUATION SLIDE.

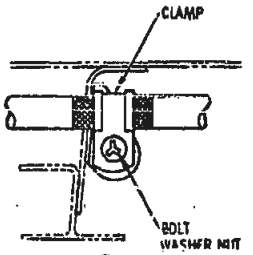
(15) Close ceiling panel and install trim forward of door (Ref. 25-26-01).

(16) With panel and trim installed, verify door operation electrically and manually (emergency mode), [Ref. Steps (13) and (14)].

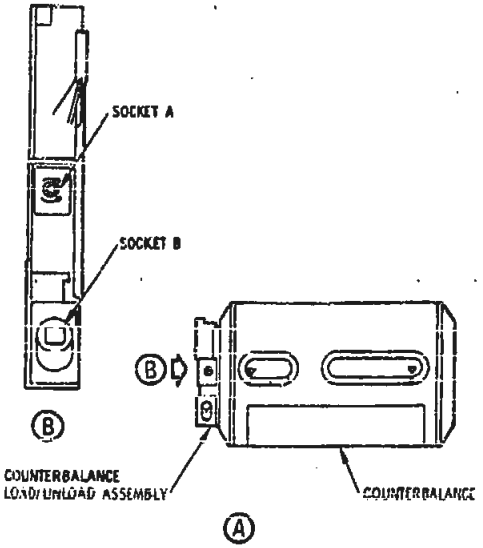
THIS PAGE INTENTIONALLY LEFT BLANK

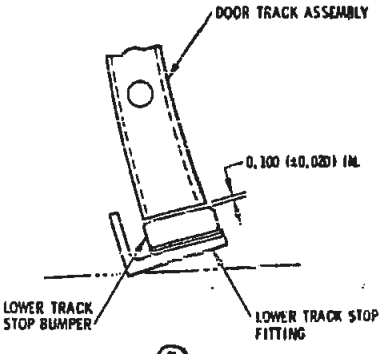


VIEW LOOKING OUTBOARD
LEFT DOOR SHOWN - RIGHT DOOR OPPOSITE
(TYPICAL)

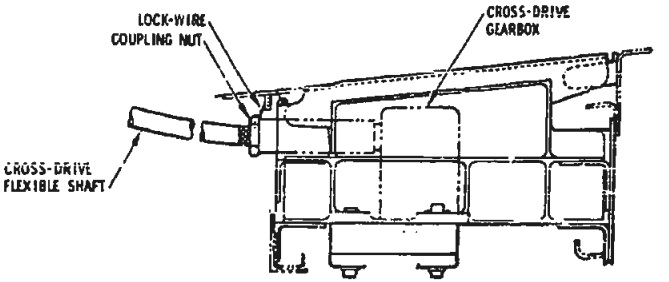


C
CLAMP INSTALLATION
(TYP)





E
FORWARD TRACK



D
FLEXIBLE SHAFT
INSTALLATION (TYP)

MI-0100-52-193

R R Cross-Drive Flexible Shaft - Removal and Installation
Figure 401

R R 001B EFFECTIVITY: ALL

PASSENGER DOOR TRACK PINION GEAR - REMOVAL AND INSTALLATION

1. General

A door track pinion gear is mounted to each cross-drive gearbox at the forward and aft sides above each passenger door. These procedures cover the removal and installation of the pinion gears.

2. Equipment and Materials

Gear puller for 3.50-inch diameter gear

C Gear puller, PN GEN 3154

Protective caps

3. Referenced Procedures

R	25-61-10	Double Slide Door-mounted Container - Removal and Installation
	52-12-00	Door Actuation System - Adjustment and Test
	52-13-01	Door Lining - Removal and Installation

4. Removal/Installation

A. Removal

(1) Open door approximately 3 inches (Ref. 52-12-00).

R (2) Remove emergency slide container (Ref. 25-61-10).

(3) Remove door lining (Ref. 52-13-01).

(4) Close door.

(5) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breaker PASS DOOR - CONTROL (Ref. 52-12-00, Table 501).

(6) Tag electrical and manual door controls.

(7) Gain access to door counterbalance.

(8) Lock counterbalance by rotating socket A (Ref. Fig. 401) in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(9) Pull manual control PULL down handle to fully extended position to relieve system preload.

(10) Push handle to closed position.

(11) Secure door track against door track guides, using C-clamps at No. 1 and No. 7 guides.

(12) Bend down lockwasher tabs at pinion retaining bolt.

(13) Remove pinion retaining bolt, lockwasher, and track guide plate.

(14) Use gear puller to remove pinion gear. Install protective cap on pinion gear spline.

B. Installation

(1) Verify that circuit breaker opened in Step 4A(5) is open and tagged.

(2) Verify that electrical and manual door controls are tagged.

(3) Remove protective cap from pinion gear spline on gearbox and install pinion gear on spline.

(4) Install track guide plate, new lockwasher, and pinion retaining bolt.

(5) Torque bolt to 200 to 300 lb in.

(6) Bend up at least two lockwasher tabs next to flat sides of bolt head.

(7) Remove C-clamps at No. 1 and No. 7 guides.

(8) Unlock counterbalance as follows:

(a) Rotate socket B counterlockwise for left doors, or clockwise for right doors until backlash is noted.

(b) Torque socket A in UNLOCK direction until socket B is in UNLOCK position and rotates freely.

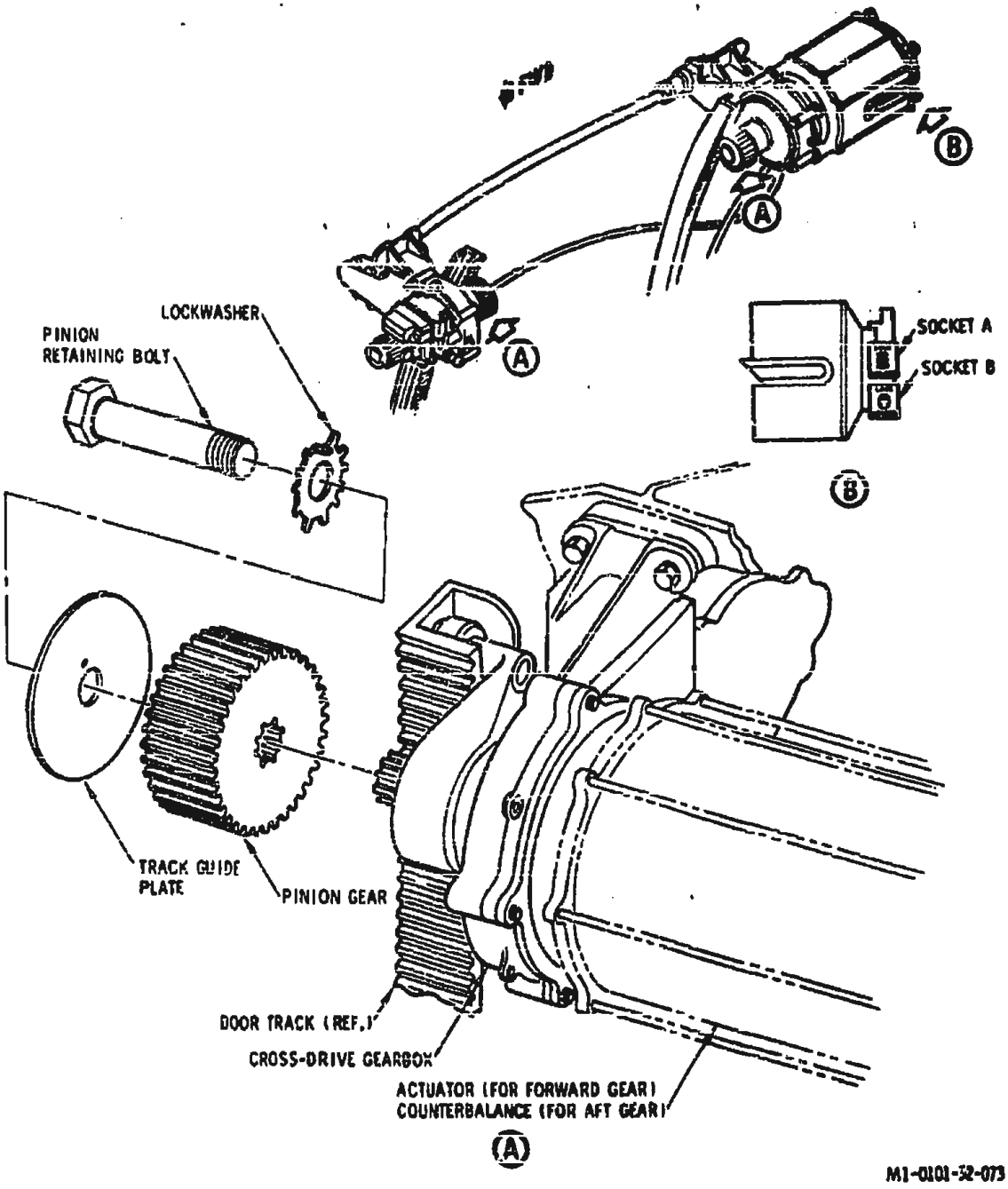
(9) Remove tags from electrical and manual door controls.

(10) Remove tag and close circuit breaker opened in Step 4.A.(5).

(11) Verify door operation (Ref. 52-12-00).

(12) Replace door lining (Ref. 52-13-01).

R (13) Replace emergency slide container (Ref. 25-61-10).



CR Door Track Pinion Gear - Removal and Installation
CR Figure 401

PASSENGER DOOR TRACK - REMOVAL AND INSTALLATION

1. General

Door tracks are mounted to the forward and aft sides of each passenger door. These procedures cover the removal and installation of the door tracks.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-390, 0.032-inch diameter, or equivalent

Rigpin, PN B994, or equivalent

Bubble protractor

Sealing Compound, LAC Spec LCM40-2121A, or equivalent

Metal Activated Sealing and Retaining Compound, MIL-S-22473D, Grade C, Loctite Corp., or equivalent

3. Referenced Procedures

	20-51-04	Environmental Sealing of Model L-1011 Airplane
R	25-61-10	Double Slide Door Mounted Container - Removal and Installation
	52-12-00	Door Actuation System - Adjustment and Test
	52-13-01	Door Lining - Removal and Installation

4. Removal/Installation

A. Removal

(1) Open door approximately 3 inches.

R (2) Remove slide container (Ref. 25-61-10).

(3) Remove door lining (Ref. 52-13-01).

(4) Close door.

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR AS PERSONAL INJURY MAY RESULT.

(5) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breaker PASS DOOR CONTROL (Ref. 52-12-00, Adjustment and Test, Table 501).

(6) Tag electrical and manual door controls.

(7) Gain access to door counterbalance through sidewall storage cabinet aft of door.

(8) Lock counterbalance by rotating socket A (Ref. Fig. 401) in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear.

(9) Pull manual control PULL handle to fully extended position to relieve system preload.

(10) Push handle to closed position.

(11) Bend down lockwasher tabs at pinion retaining bolt.

(12) Remove pinion retaining bolt, lockwasher, and track guide plate.

(13) Disconnect cross-drive flexible shaft at gearbox.

(14) Loosen pivot antirotation setscrew two complete turns at each door link.

WARNING: BRACE DOOR IN DOOR OPENING TO PREVENT IT FROM FALLING INWARD WHEN DOOR PIVOTS ARE REMOVED. DOOR WEIGHS APPROXIMATELY 130 POUNDS.

(15) Remove lower pivot bolt, pivot, and pivot shims. Identify and retain shims in groups as removed.

(16) Remove upper pivot bolt, pivot, and pivot shims. Identify and retain shims in groups as removed.

(17) Rotate both upper and lower door links outboard to clear track.

(18) Move track toward center of door until track is clear of cam followers on gearbox. Remove track.

B. Installation

(1) Verify that circuit breaker opened in Step 4A(5) is open and tagged.

(2) Verify that electrical and manual door controls are tagged.

(3) With cam follower assembly on gearbox rotated into path of track, install track so that track guide rollers and gearbox cam followers fit inside track.

(4) On aircraft 034-056, adjustable track guide rollers are installed which can be adjusted radially (±0.06) inch to reduce track friction. Adjust as follows:

(a) Loosen nut and disengage splined keeper from eccentric guide roller shaft (Ref. Fig. 402).

(b) Rotate eccentric guide roller shaft clockwise until roller contacts side of door track [mark eccentric roller shaft and fitting to index position (Ref. Fig. 402)].

(c) Rotate eccentric guide roller shaft counter-clockwise until roller contacts side of door track [note position of index mark on eccentric roller shaft and mark fitting to index position (Ref. Fig. 402)].

(d) Locate index mark on eccentric guide roller shaft between the index marks on fitting to guide roller in door track (Ref. Fig. 402).

(e) Engage splined keeper and torque nut 75 to 150 lb in.

(5) Install track guide plate and new lockwasher.

(6) Apply sealing compound to pinion retaining bolt (Ref. 20-51-04).

(7) Wet install pinion retaining bolt and torque 200 to 300 lb in. and bend up at least two lockwasher tabs next to flat sides of bolt head.

(8) Attach link rods to door track with pivots and pivot shims. Replace shims in groups identified in Steps 4A(16) and 4A(17) (Ref. Fig. 401).

(9) Align arrowhead on pivot with antirotation setscrew at each pivot link. Do not tighten setscrews.

(10) Apply sealing compound to pivot bolts (Ref. 20-51-04).

(11) Wet-install pivot bolts.

(12) Lock-wire pivot bolt to pivot. Tighten setscrews.

(13) Install rigpin in each lower link.

(14) Adjust both tracks to obtain correct angle at lower links. Angle is measured by resting bubble protractor on rigpin.

NOTE: Aircraft must be level laterally within ±0.50 degree.

Adjustment of angle may be made by turning the manual drive socket for the forward track and by torquing socket B on the counterbalance for the aft track.

(15) Remove rigpin.

(16) Lift forward track 0.100 (±0.020) inch by turning manual drive socket.

CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST LINE UP WITH FEMALE SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT.

IF MALE END OF SHAFT WILL NOT ENGAGE WITH SOCKET, RAISE FORWARD TRACK MINIMUM ADDITIONAL DISTANCE TO ALLOW ENGAGEMENT.

(17) Connect shaft to gearbox. Tighten coupling nut finger-tight and lock-wire nut to gearbox.

(18) Unlock counterbalance.

(a) Rotate socket B counterclockwise for left doors, clockwise for right doors, until backlash is noted.

(b) Torque socket A in UNLOCK direction until socket B is in UNLOCK position and rotates freely.

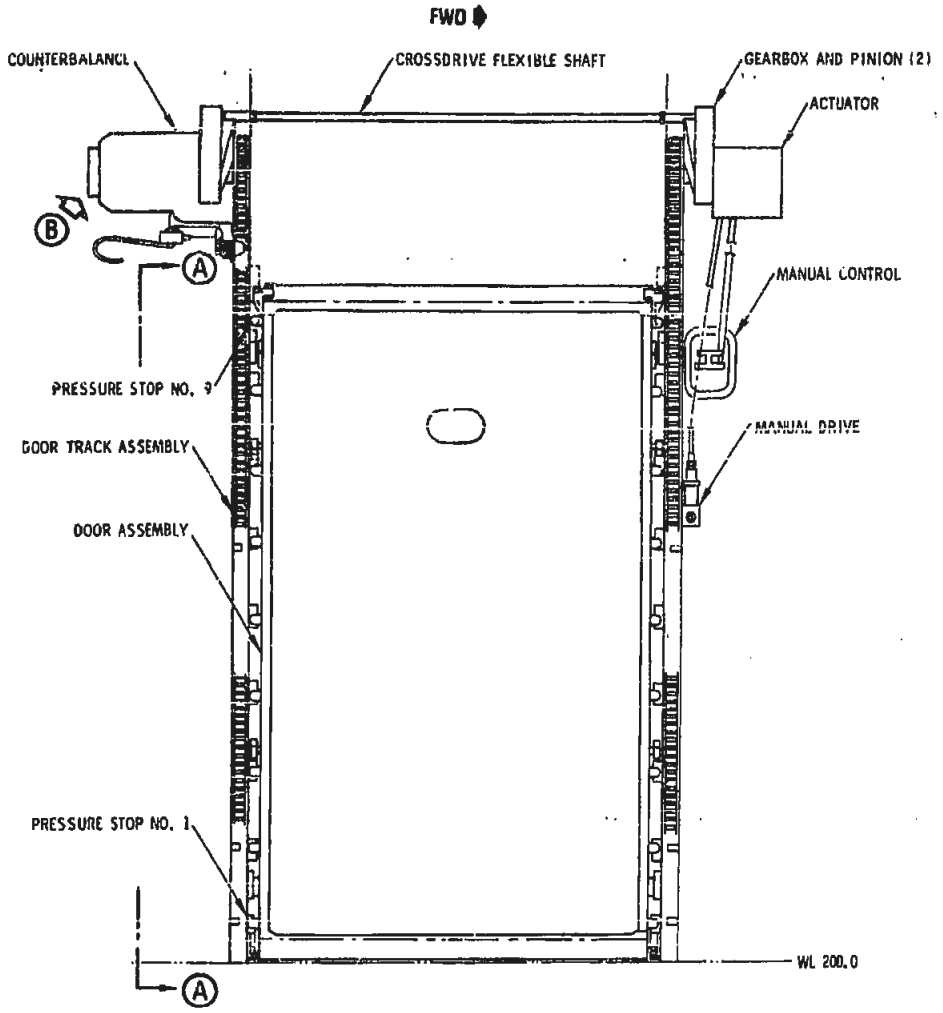
(19) Remove tags from electrical and manual controls.

(20) Remove tag and close circuit breaker opened in Step 4A(5).

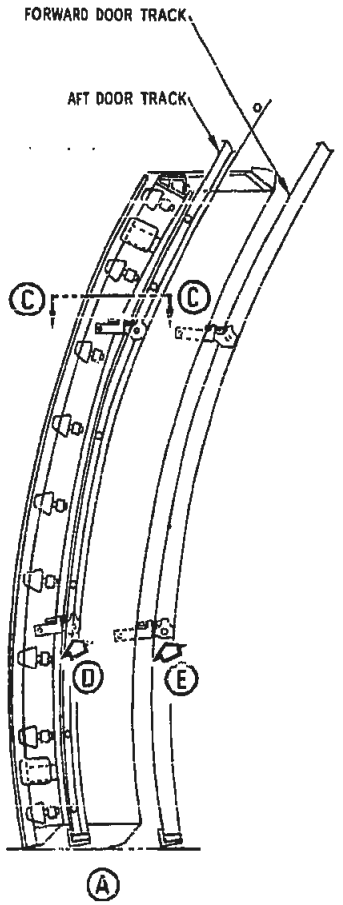
(21) Verify door operation (Ref. 52-12-00, Adjustment and Test).

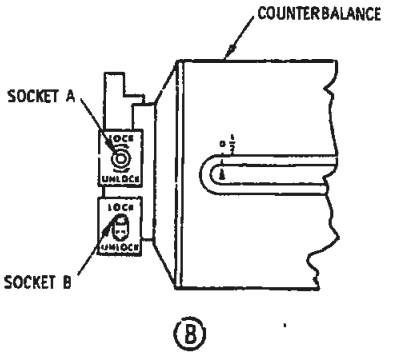
(22) Replace door lining (Ref. 52-13-01).

R (23) Replace slide container (Ref. 25-61-10).



VIEW LOOKING OUTBOARD
LEFT DOOR SHOWN - RIGHT DOOR OPPOSITE

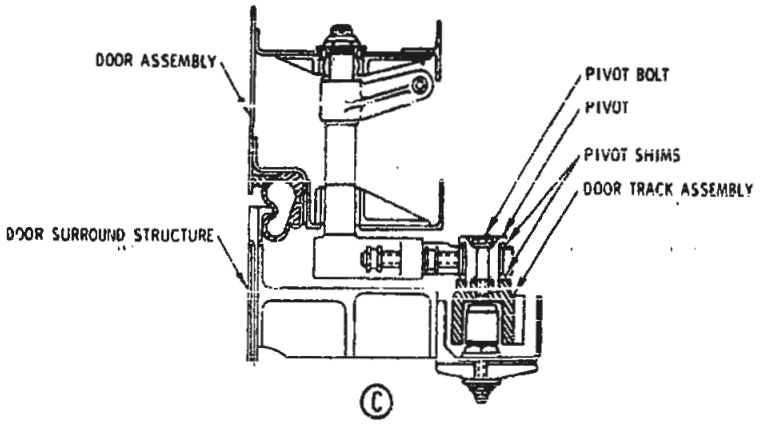




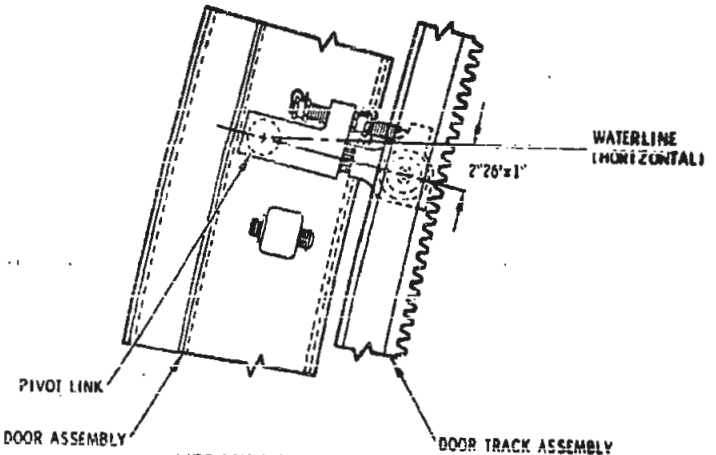
G 1638
M1-0100-52-058

R Door Track - Removal and Installation
R Figure 401 (Sheet 1)

R EFFECTIVITY: ALL
R
050



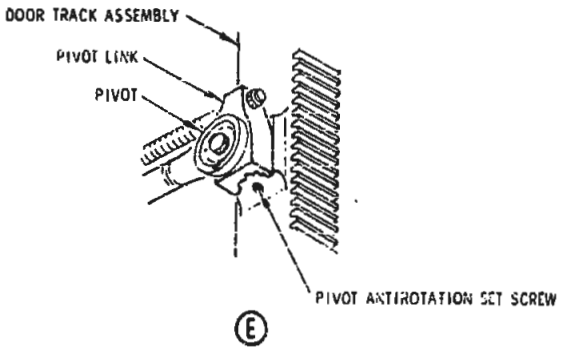
Ⓒ



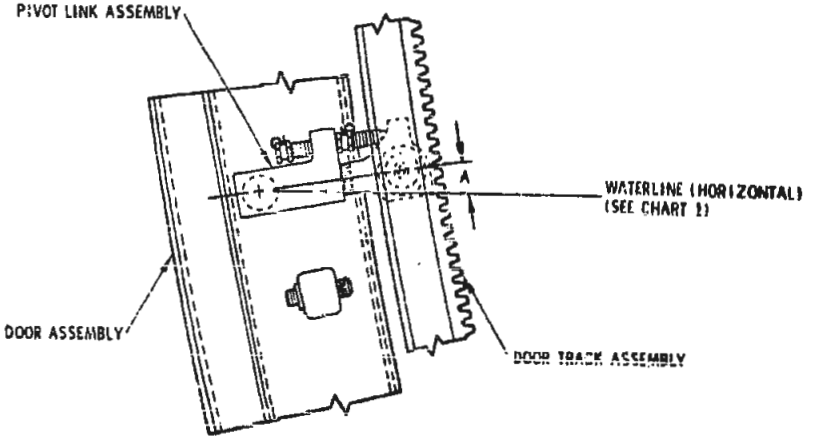
L/R2 AND L/R3 DOORS

Ⓓ

CHART 1		
DOOR	ANGLE A±1°	
	FWD LINK	AFT LINK
L1	6°05'	6°25'
R1	3°50'	2°30'



Ⓔ



L1 AND R1 DOORS

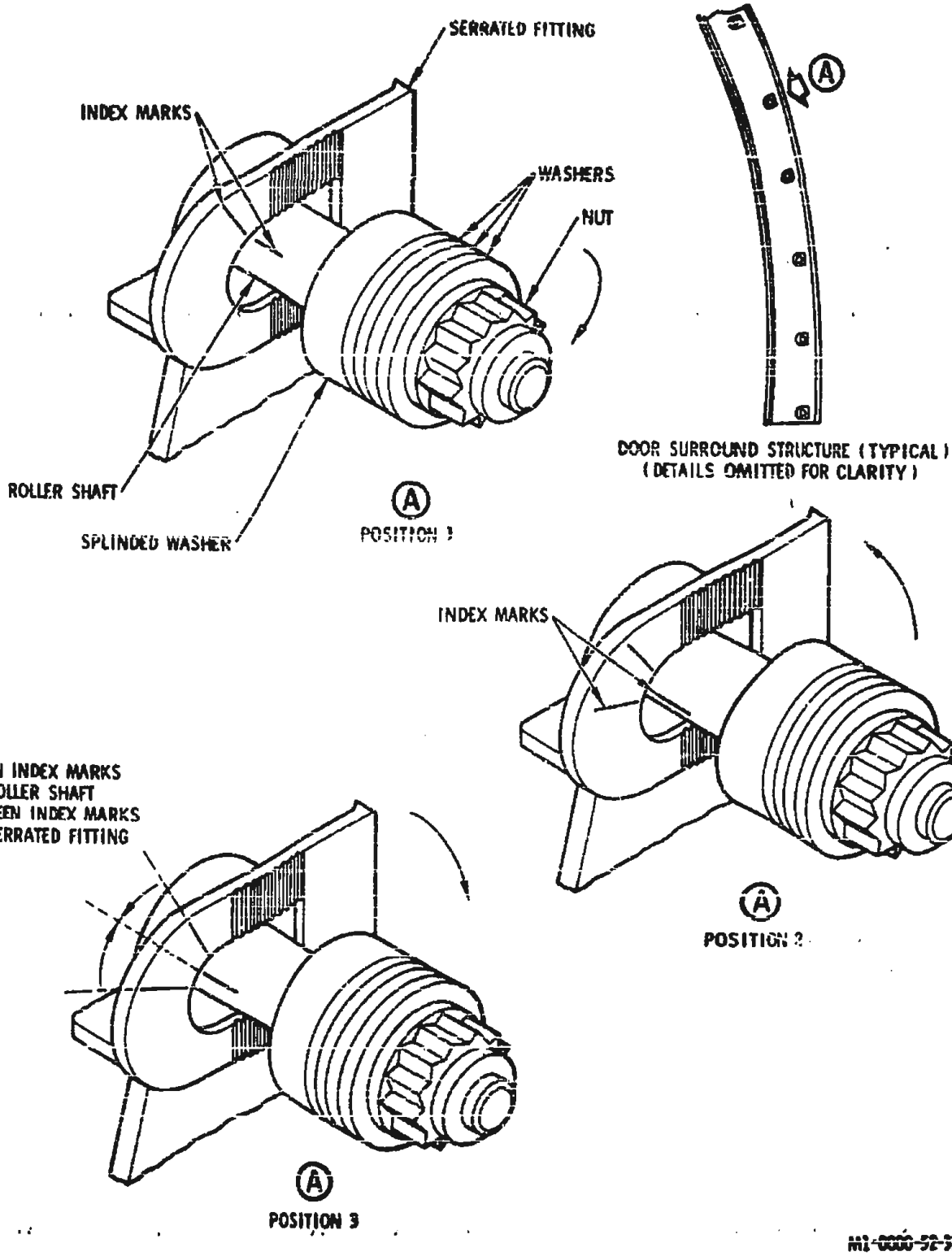
Ⓓ

MI-0001-52-556

R Door Track - Removal and Installation
R Figure 401 (Sheet 2)

EFFECTIVITY: ALL

001B



M1-0000-52-339

R Passenger Door Track Guide Roller Adjustment
R Figure 402

MANUAL THREE-WAY ANGLE DRIVE - REMOVAL AND INSTALLATION

1. Equipment and Materials

R Sealing Compound, LAC Spec LCM 40-2121A, or equivalent

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Protective caps

2. Referenced Procedures

R 20-51-04 Environmental Sealing of Model L-1011 Airplane

25-26-08 Passenger Door Shroud and Trim - Removal and Installation

52-12-00 Door Actuation System - Maintenance Practices

3. Removal/Installation

A. Removal

R (1) Remove doorway lining forward of L1 door (Ref. 25-26-08).

(2) Disconnect manual drive flexible shaft from angle drive (Ref. Fig. 401). Install protective caps on shaft and angle drive fittings.

(3) Remove mounting bolts accessible from outside aircraft.

(4) Support angle drive while removing bolts and washers which hold drive to brackets.

(5) Remove angle drive.

B. Installation

R R (1) Verify that all mounting surfaces are clean and free of grease and sealing material.

R R (2) Apply sealant to faying surfaces and mount angle drive to inner surface of fuselage.

R NOTE: Wet-install mounting bolts with sealant.

(3) Determine number of washers required between angle drive and brackets to maintain alignment of drive.

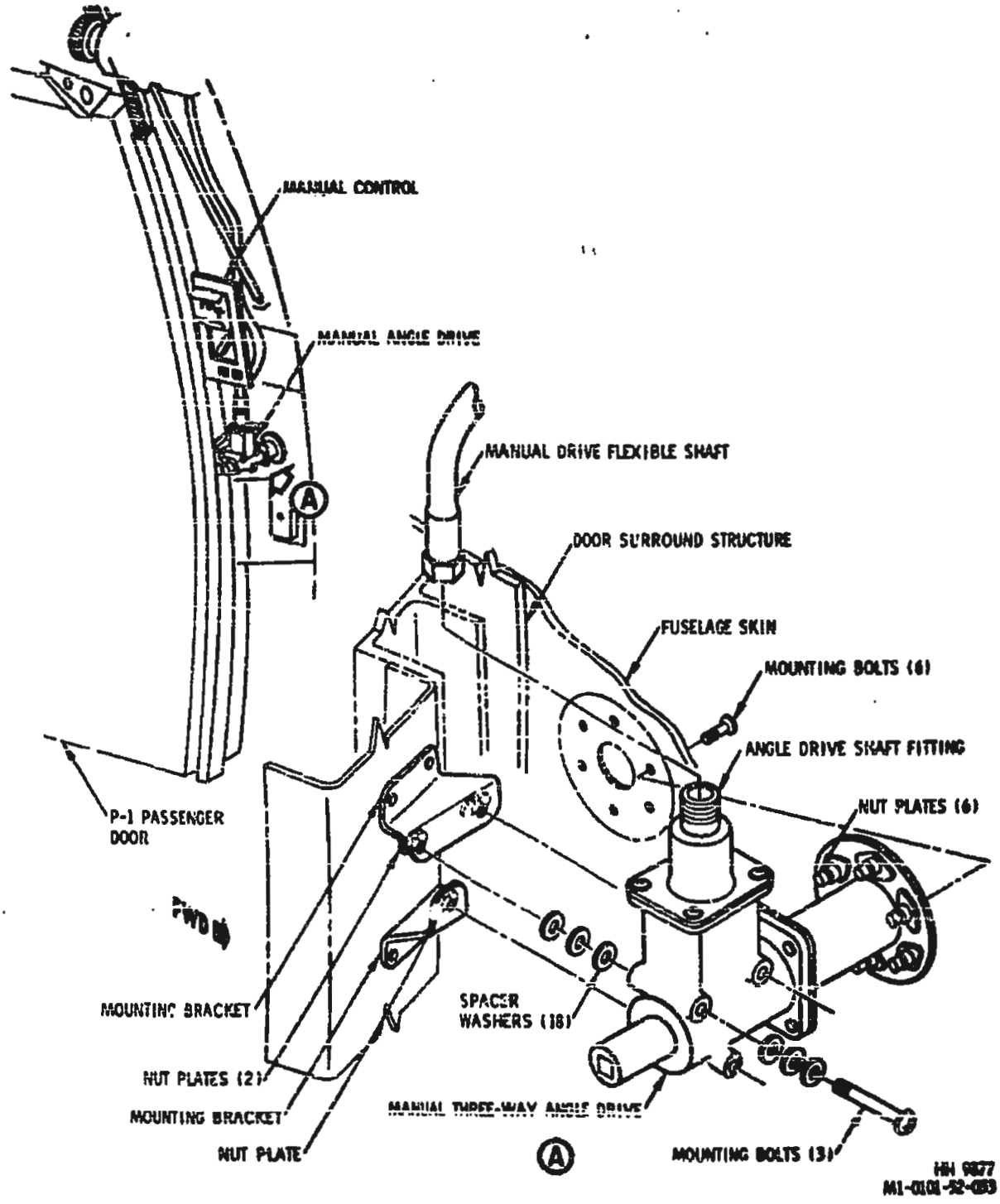
NOTE: Use all washers provided. Washers not used between drive and brackets are to be used under bolt heads.

R (4) Wet-install mounting bolts with sealant.

(5) Remove protective caps and connect manual drive flexible shaft. Tighten coupling nut finger tight and lock-wire shaft coupling to drive.

(6) Verify manual door operation (Ref. 52-12-00).

(7) Install doorway lining (Ref. 25-26-08).



Manual Three-way Angle Drive - Removal and Installation
Figure 401

MANUAL TWO-WAY ANGLE DRIVE - REMOVAL AND INSTALLATION

1. General

Manual two-way angle drives are located forward of all passengers doors except the L1 door which uses a three-way angle drive. The removal and installation procedures for the five angle drives are the same.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Protective caps

3. Referenced Procedures

20-51-04	Environmental Sealing of L-1011 Aircraft
25-26-08	Passenger Door Shroud and Trim - Removal and Installation
52-12-00	Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Remove doorway lining forward of door (Ref. 25-26-08).

(2) Disconnect manual drive flexible shaft at angle drive (Ref. Fig. 401). Install protective caps on shaft and angle drive fittings.

(3) Remove mounting bolts and bushings at inboard mounting surface of angle drive.

(4) Support drive while removing mounting bolts at top of drive.

(5) Remove angle drive.

(6) Replace mounting bolts in top of drive.

B. Installation

(1) Verify that bushings are installed in drive mounting holes (Ref. Fig. 401).

(2) Verify that all mounting surfaces are clean.

(3) Mount top of drive to bracket using outboard housing mounting bolts.

(4) Mount inboard mounting surface of drive to bracket.

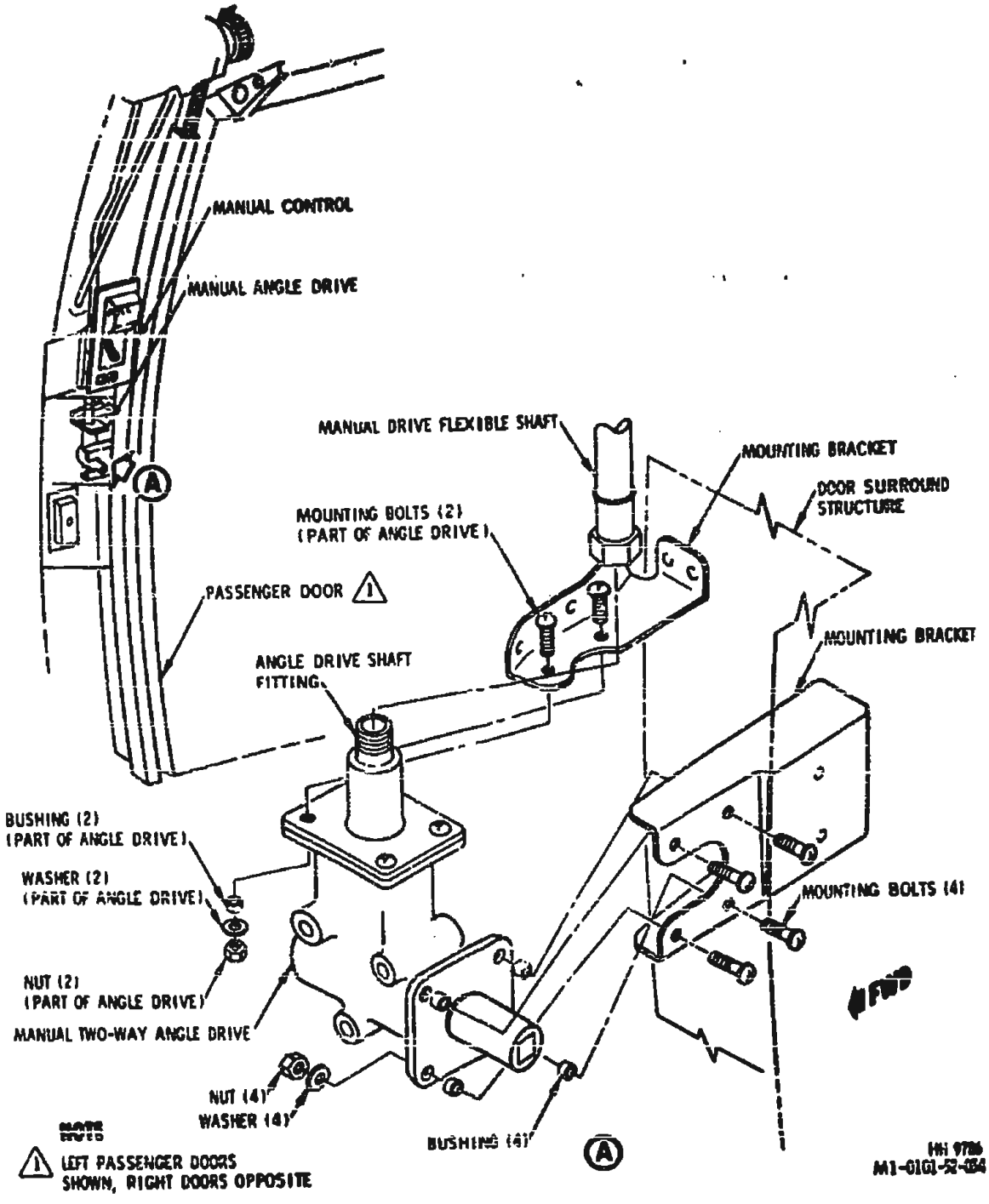
R NOTE: Wet-install mounting bolts (Ref. 20-51-04).

(5) Remove protective caps and connect manual drive flexible shaft to angle drive.

(6) Lock-wire shaft fitting to drive.

(7) Verify manual door operation (Ref. 52-12-00).

(8) Install doorway lining (Ref. 25-26-08).



Manual Two-way Angle Drive - Removal and Installation
Figure 401

PASSENGER DOOR OPEN LIMIT SWITCH - REMOVAL AND INSTALLATION

1. General

The door open limit switches are located at the upper end of travel of the passenger door forward track at all doors except the R1 door.

At the R1 door the switch is located in the same relative position, but actuated by the aft track.

2. Referenced Procedures

25-26-01 Ceiling Trim Drop Panel - Removal and Installation

52-12-00 Door Actuation System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Remove applicable ceiling panel (Ref. 25-26-01) to gain access to door open limit switch (Ref. Fig. 401).

(2) Open door until upper end of door track is approximately 6 inches from door open limit switch.

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(3) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breaker PASS DOOR - CONTROL (Ref. 52-12-00, Table 501).

(4) Tag electrical and manual door controls.

(5) Identify electrical wires and disconnect from switch.

(6) Remove switch from bracket.

B. Installation

(1) Verify that circuit breaker opened in Step 3A(3) is open and tagged.

(2) Mount switch on bracket but torque locking nuts only finger tight to permit later adjustment.

(3) With switch in the relaxed position (track not contacting roller), verify dimension in Figure 401 between switch bracket and roller. If roller is not within the given dimensions, set adjustment screw to bring roller to correct gap.

(4) Remove tag from manual door control.

(5) Manually hand crank door until end of track is in position shown in Fig. 401.

(6) Adjust switch to actuate and lock in place by tightening nuts.

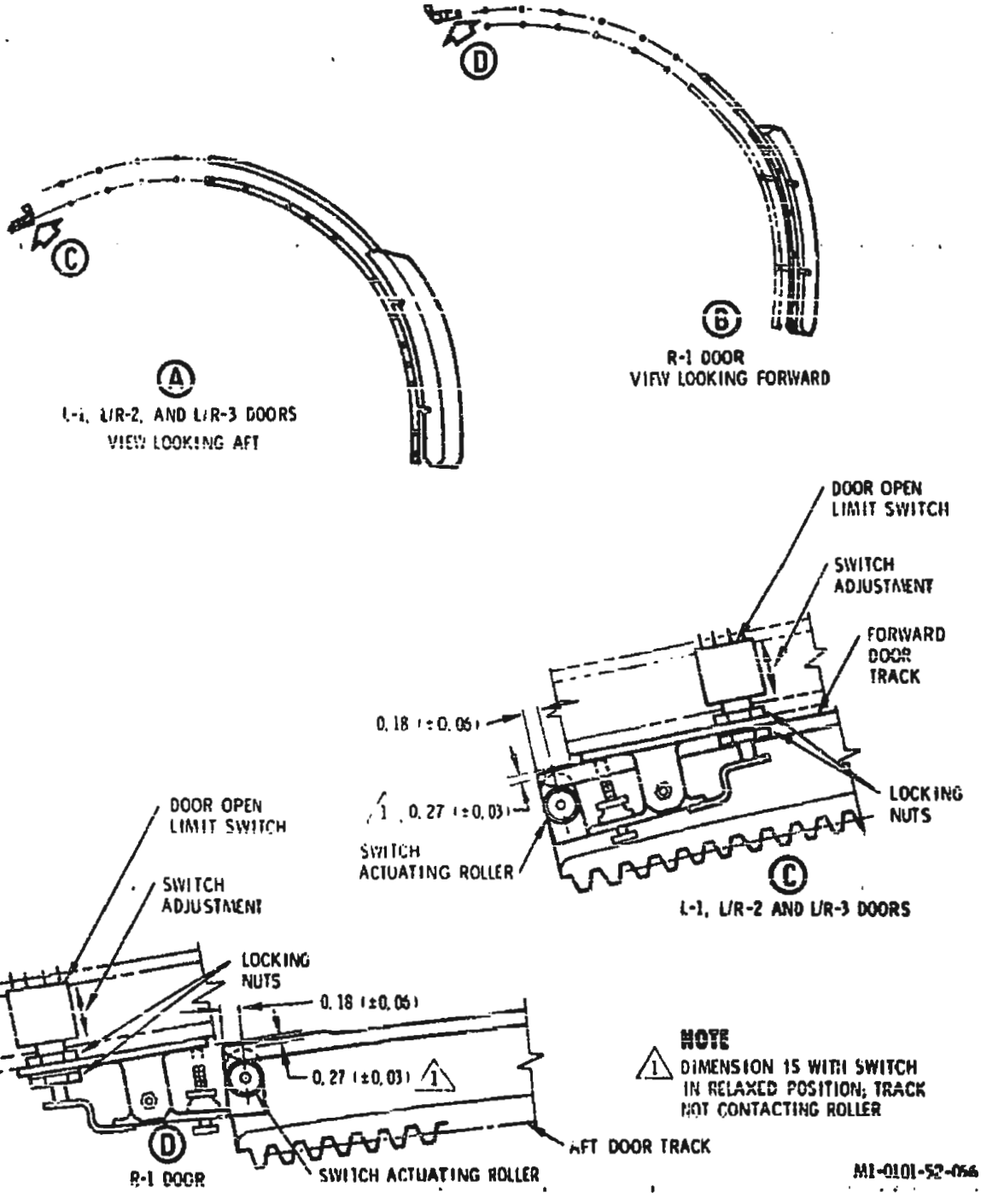
(7) Connect electrical wires as identified in Step 4A(5).

(8) Remove tag from electrical door control.

(9) Remove tag and close circuit breaker opened in Step 3A(3).

R (10) Verify door operation (Ref. 52-12-00).

R (11) Replace ceiling panel (Ref. 25-26-01).



R R Door Open Limit Switch - Removal and Installation
Figure 401

EFFECTIVITY: ALL

001B

PASSENGER DOOR CLOSED LIMIT SWITCH - REMOVAL AND INSTALLATION

1. General

The passenger door closed limit switch is mounted above the forward pinion gear at each passenger door except at the R-1 passenger door, where it is mounted above the aft pinion gear.

2. Referenced Procedures

25-26-08 Passenger Door Shroud and Trim - Removal and Installation

52-12-00 Door Actuation System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Operate door to place forward door track 0.25 (±0.10) inch above lower bumper stop pad.

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(2) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breaker PASS DOOR CONTROL (Ref. 52-12-00, Table 501). R

(3) Tag electrical and manual door controls.

(4) Remove doorway shroud (Ref. 25-26-08) to gain access to door closed limit switch (Ref. Fig. 401).

(5) Identify electrical wires and disconnect from switch.

(6) Remove switch from bracket.

B. Installation

(1) Verify that circuit breaker opened in Step 3A(2) is open and tagged.

(2) Verify that forward door track is 0.25 (±0.10) inch above lower bumper stop pad.

(3) Verify that electrical and manual door controls are tagged.

(4) Mount switch on bracket but torque locking nuts finger tight only, to permit later adjustment.

(5) Adjust switch until switch contacts are actuated.

(6) Lock switch in place by tightening jamnut.

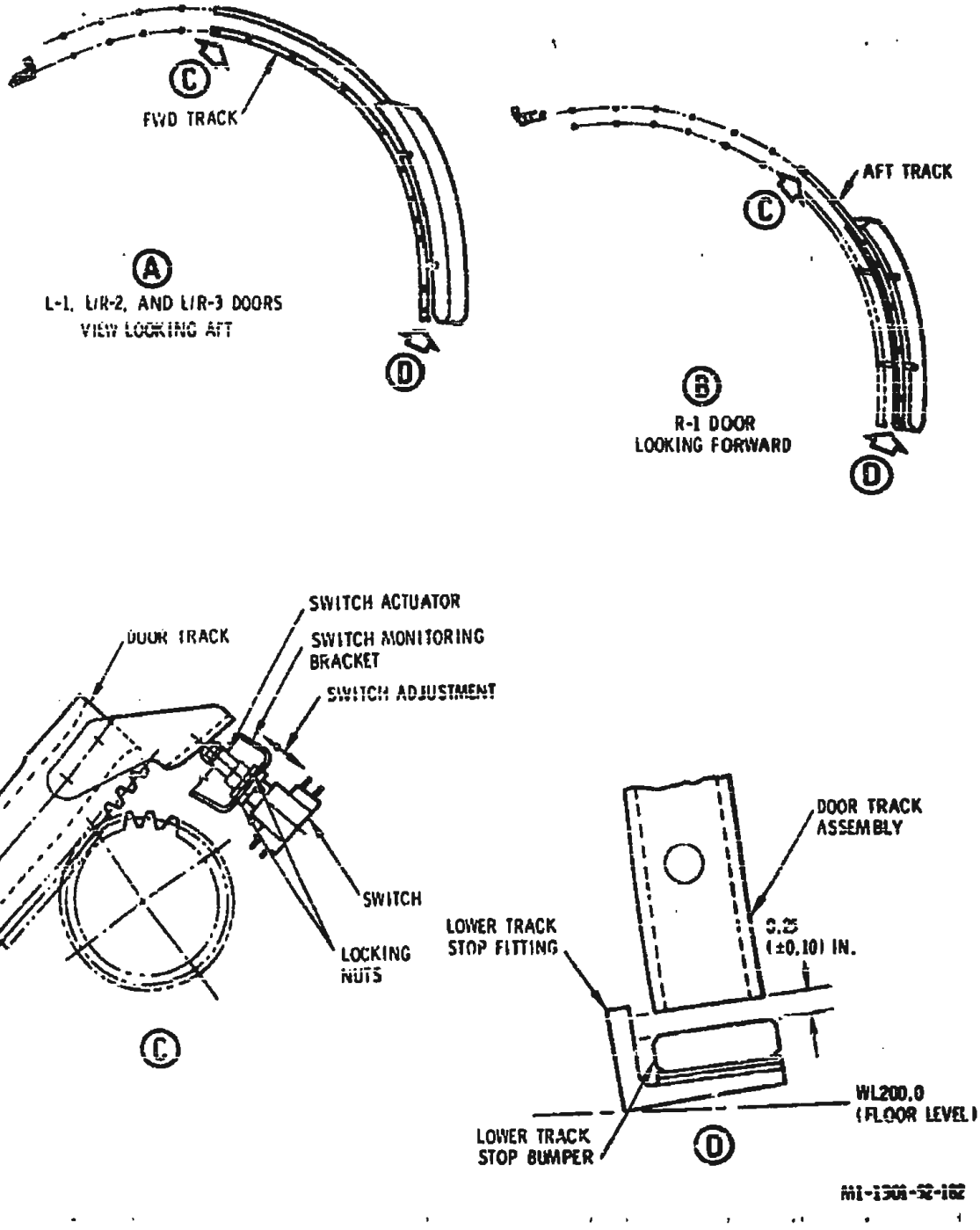
(7) Connect electric wires as identified in Step 3A(5).

(8) Remove tag and close circuit breaker opened in Step 3A(2).

(9) Remove tags from electrical and manual door controls.

(10) Verify door operation (Ref. 52-12-00).

(11) Reinstall doorway shroud (Ref. 25-26-08).



R R Door Closed Limit Switch - Removal and Installation
Figure 401

EFFECTIVITY: ALL

001B

EVACUATION SLIDE ENGAGE/DETACH SWITCHES - REMOVAL AND INSTALLATION

1. General

Two switches at each passenger door, enable or disable the door actuation system. The removal and installation procedures are the same for all switches.

2. Referenced Procedure

52-12-00 Door Actuation System - Adjustment and Test

3. Removal/Installation

A. Removal

R R R (1) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breakers ACTUATOR and CONTROL (Ref. 52-12-00, Table 501).

(2) Tag electrical door control.

(3) Squeeze sides of clear cover over PULL DOWN handle and remove (Ref. Fig. 401).

(4) Loosen set screw and remove evacuation slide selection lever.

(5) Pull or pry top of passenger door operator instruction sign panel inboard and lift out of control panel pan assembly.

(6) Remove screws holding switch mounting bracket to bracket support while supporting mounting bracket.

CAUTION: DO NOT EXCEED LENGTH OF ELECTRICAL WIRING SERVICE LOOP WHEN REMOVING BRACKET AND SWITCHES.

(7) Remove bracket and switches from selector assembly.

(8) Identify electrical wires and disconnect from switch.

(9) Remove switch from bracket.

B. Installation

(1) Verify that circuit breakers opened in Step 3A(1) are open and tagged.

(2) Mount switch on bracket.

(3) Connect electrical wires as identified in Step 4A(8).

(4) Depress applicable switch plunger to clear switch actuator while installing switch mounting bracket on outboard side of bracket support.

(5) With switch actuating arm in each position, adjust corresponding switch to complete electrical circuit. Lock switches in place with jam nut.

(6) Fit bottom of instruction sign panel into groove at bottom of depression in pan assembly and press top of panel into place.

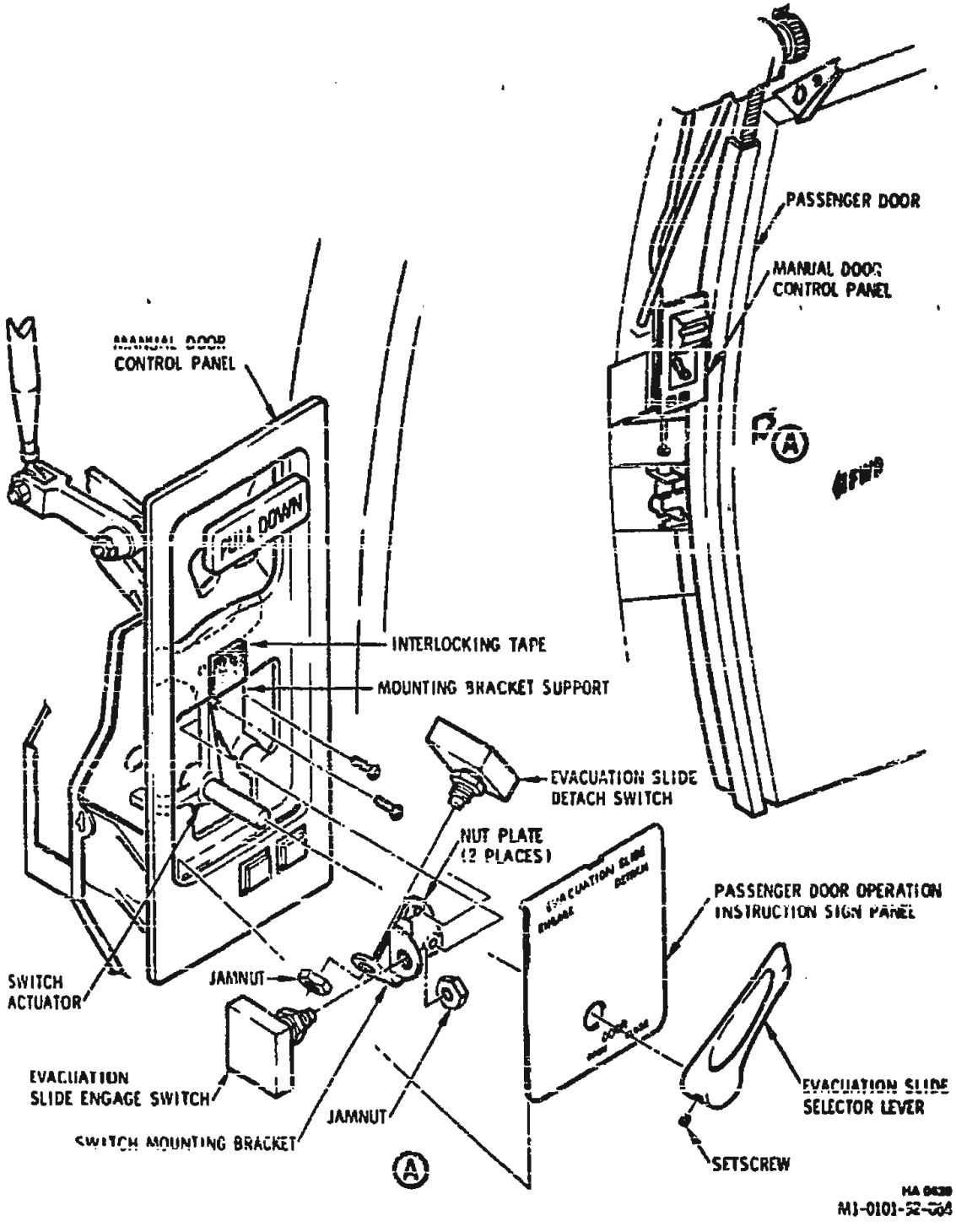
(7) Install evacuation slide selector lever and tighten set screw.

(8) Remove tag from electrical door control.

(9) Remove tags and close circuit breakers opened in Step 3A(1).

(10) Verify door operation (Ref. 52-12-00).

(11) Press clear plastic cover into place over PULL DOWN handle.



Evacuation Slide Engage/Detach Switches - Removal and Installation
Figure 401

PASSENGER DOOR UPLOCK/DOWNLOCK RETRACT LIMIT SWITCH REMOVAL AND INSTALLATION

1. General

This procedure covers removal and installation of the uplock/downlock retract limit switch. One switch is located at each passenger entry door. The switch is actuated by manual operation of the pin release cable control to the door lock mechanism, or by operation of the lock mechanism solenoid. The procedure is applicable to all passenger entry door locations.

Service Bulletin 52-101 adds a Teflon insulator between the uplock/downlock retract limit switch and the stop angle (which has a corner trimmed off) to prevent switch terminals from grounding out on the stop angle.

2. Referenced Procedures

52-12-00 Door Actuation System - Adjustment and Test

52-12-26 Lock Mechanism - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Close door.

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

(2) On galley left circuit breaker panel, zone 137, open and tag applicable passenger door circuit breaker (Ref. 52-12-00, Table 501):

PASS DOOR CONTROL-FWD (A19)

PASS DOOR CONTROL LH+RH-CTR (A20)

PASS DOOR CONTROL-AFT (A21)

(3) Tag electrical and manual door controls.

(4) Gain access to applicable switch by opening panel or removing sidewall trim above and aft of door (Ref. Fig. 401).

(5) Remove electrical wire lugs from switch and identify for reinstallation.

(6) Identify position and orientation of stop angle on switch (relative to clevis tang), then remove switch installation fasteners, switch, stop angle, and switch plunger actuator. Retain stop angle, plunger actuator, and fasteners for reinstallation.

NOTE: On aircraft with SB52-101, retain insulator (located under the stop angle) for reinstallation.

B. Installation

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

(1) Verify that circuit breaker opened in Step 3A(2) is open and tagged, and door manual and electrical controls are tagged.

(2) On aircraft without SB52-101, install switch, stop angle, and plunger actuator using screws, washers, and nuts.

(2) On aircraft with SB52-101, install switch, insulator, stop angle, and plunger actuator using screws, washers, and nuts.

NOTE: Stop angle must be positioned so that tang on solenoid clevis is on aft side of (but not contacting) stop angle, and oriented to contact stop angle before solenoid plunger disengages from solenoid.

(3) Verify that protrusion of solenoid plunger from solenoid is 0.56 to 0.62 inch. If not, lock mechanism must be adjusted before continuing (Ref. 52-12-26).

(4) Verify clearance gap of 0.23 to 0.29 inch between actuator plunger and striker. If necessary, adjust striker using serrated surface of striker and clevis to attain proper clearance.

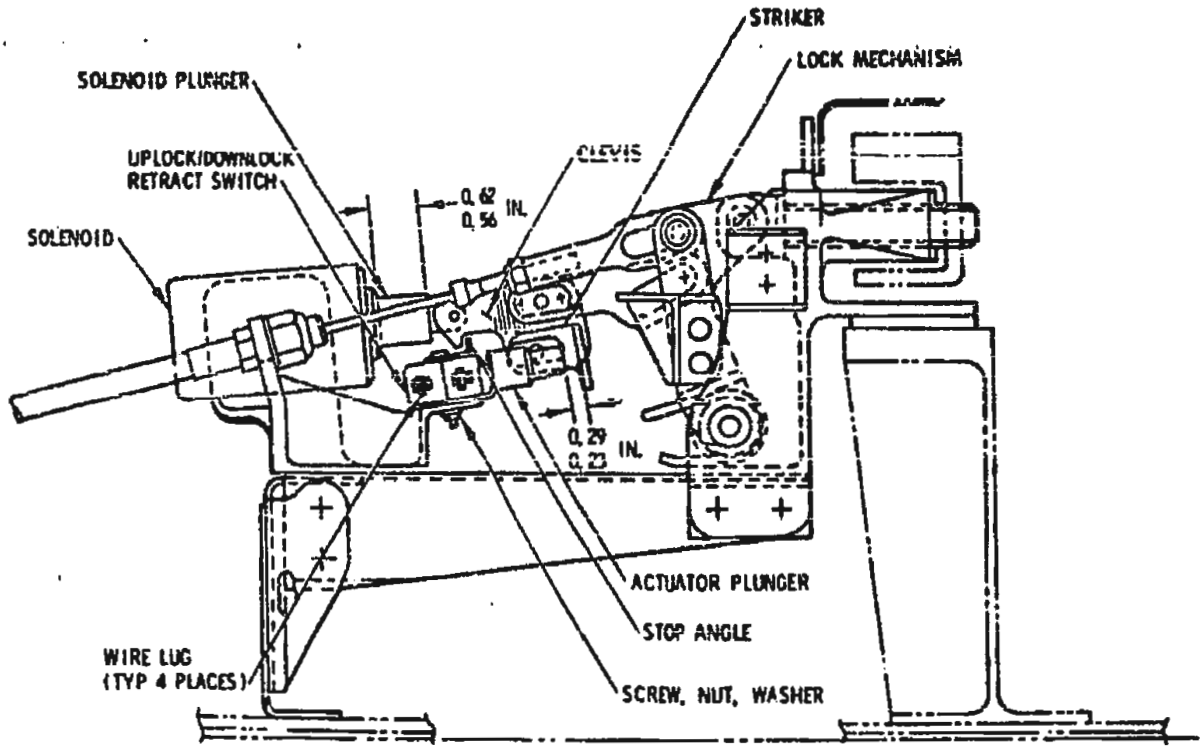
CAUTION: VERIFY THAT SWITCH TERMINALS AND WIRE LUGS CLEAR THE STOP ANGLE.

(5) Install wire lugs to switch as identified in Step 3A(5).

(6) Close circuit breakers opened in Step 3A(2), and remove tags.

(7) Verify door operation (Ref. 52-12-00).

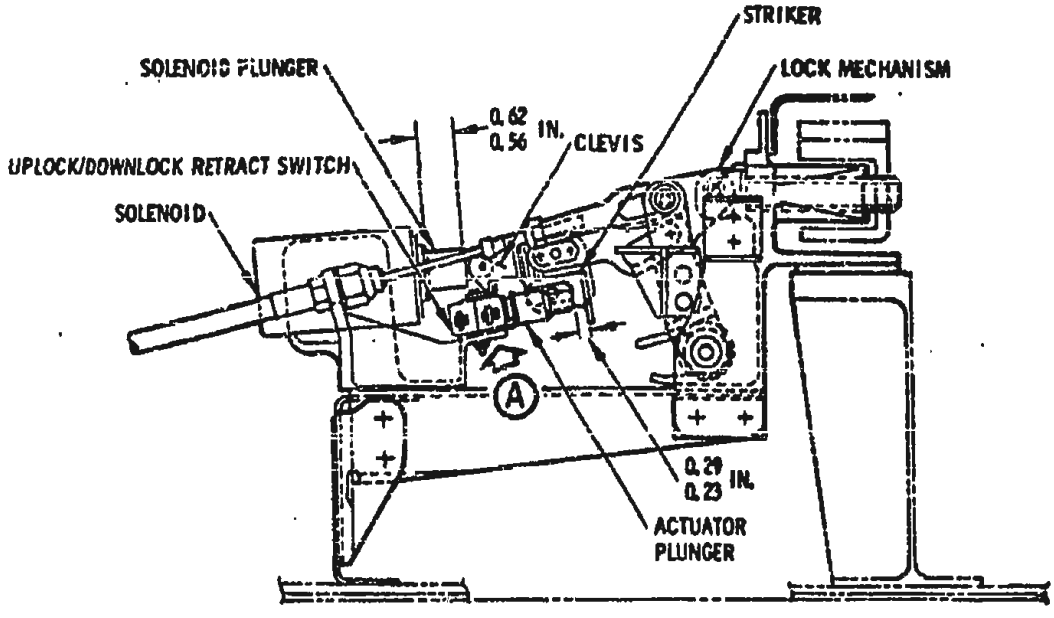
(8) Close access panels and install trim, as required.



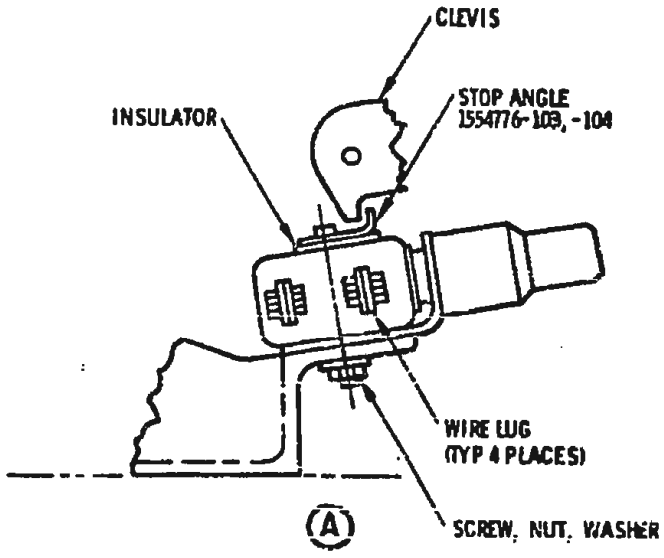
TYPICAL SWITCH INSTALLATION

M1-0100-52-234

Uplock/Downlock Retract Limit Switch - Removal and Installation
Figure 401



TYPICAL SWITCH INSTALLATION



M1-0109-52-401

Uplock/Downlock Retract Limit Switch - Removal and Installation
Figure 401

PASSENGER DOOR HANDLE - REMOVAL AND INSTALLATION

1. General

These procedures are for removing a passenger door handle and installing the same handle at the same location. If a handle, other than the one removed is to be installed, refer to adjustment and test procedure (Ref. 52-12-24).

2. Equipment and Materials

Rigpin, PN B994, or equivalent

R Sealing Compound, Loctite Corp. P/N 7931, or equivalent

3. Referenced Procedure

52-12-24 Door Handle - Adjustment and Test

4. Removal/Installation

A. Removal

R (1) Open door.

R (2) Remove clear cover over inner handle on inside of
R aircraft (Ref. Fig. 401).

R (3) Loosen set screw and remove evacuation slide selector
R lever.

R (4) Remove control panel around selector lever and inner
R handle.

R (5) Verify that inner and outer handles are in full up
R position.

R (6) Install rigpin.

R (7) Disconnect both control rods by removing nuts, bolts,
R and washers.

R (8) On L/R2 and L/R3 doors, rempve flexible shaft.

R (9) With handle assembly supported, remove screws attaching
R the assembly to structure.

R (10) Remove handle assembly.

R B. Installation

R (1) Verify that rigpin installed in Step 4A(6) is in place.

R (2) Verify handle assembly rigging (Ref. 52-12-24).

R (3) Verify that all mounting surfaces are clean and free of
R sealing material.

R (4) Apply sealant to faying surface and mount handle
R assembly to inner surface of fuselage.

R (5) Insert handle in opening.

R (6) Install screws removed in Step 4A(9).

R CAUTION: ON THE L1 DOOR ONLY, THE PUSH-PULL ROD ASSEMBLY
R BETWEEN SELECTOR ASSEMBLY AND EXTERNAL DOOR
R OPERATING LEVER MUST BE POSITIONED WITH THE UPPER
R HYLOCK RIVET COLLAR POINTING OUTBOARD TO ENSURE
R CLEARANCE WITH ADJACENT BRACKET.

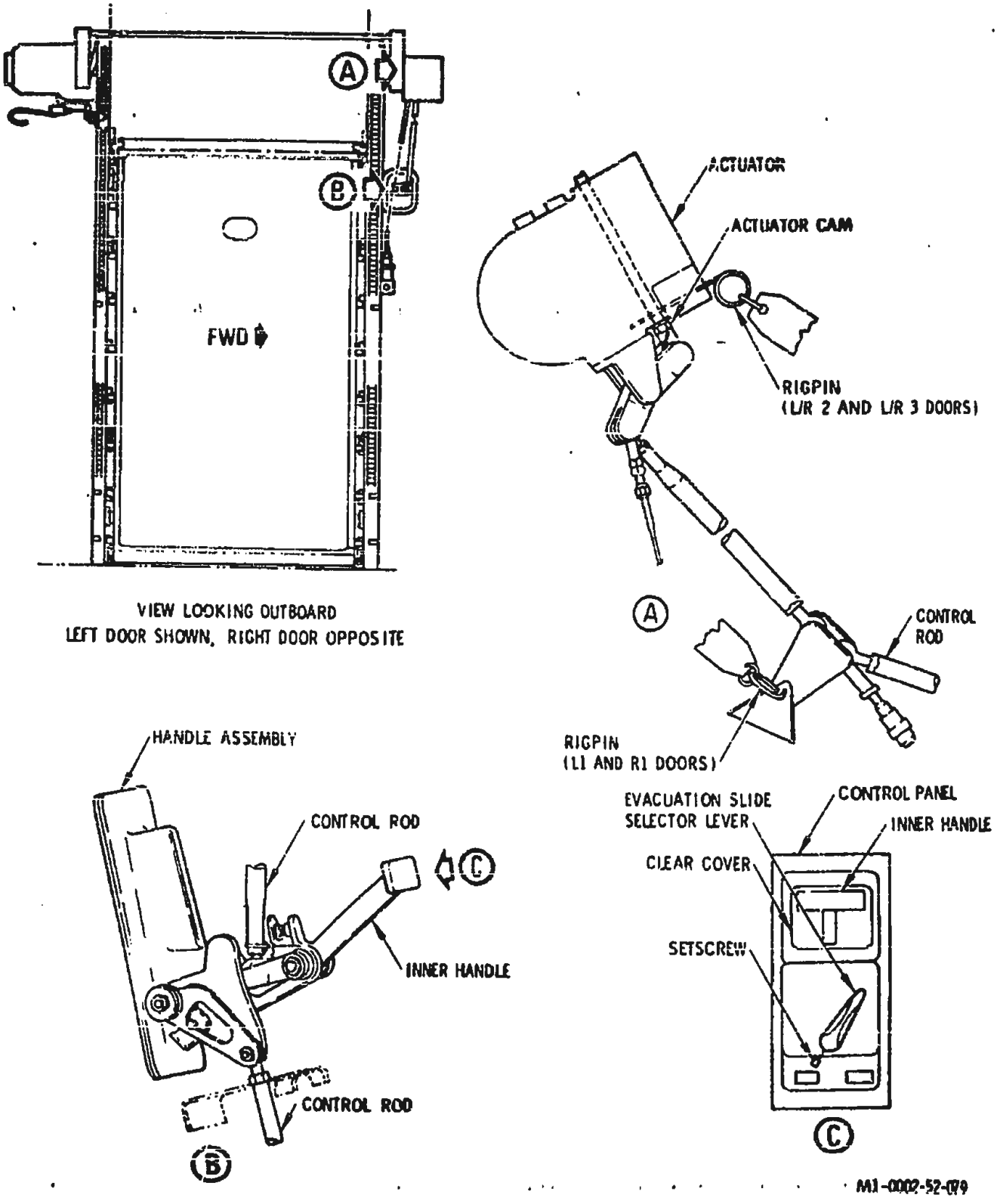
R (7) Install screws, nuts and washers in control rods
R finger-tight and rig (Ref. 52-12-24).

R (8) Verify door handle operation (Ref. 52-12-24).

R (9) Install control panel around selector lever and inner
R handle.

R (10) Install evacuation slide selector lever and secure with
R setscrew.

R (11) Install clear cover over inner handle on inside of
R aircraft.



R
R

Door Handle - Removal and Installation
Figure 401

PASSENGER DOOR HANDLE - ADJUSTMENT AND TEST

1. General

This section contains procedures for checking adjustment of the passenger door handle assembly and for checking adjustment of the passenger door handle control system.

R The passenger door outer handle has four positions, including the fully stowed and latched position plus three functional "detent" positions. The passenger door inner handle has only three positions; essentially corresponding to the three detent positions of the passenger door outer handle mechanism. The stowed (full-up) position of the passenger door inner handle is referred to as "first detent". Similarly, the first pull-down position of the inner passenger door handle is referred to as the "second detent" and the full down position as "third detent" (just as the full down position of the passenger door outer handle is the "third detent.").

R "Detent" positions specifically refer to the three possible positions of the ball end of the spring plunger assembly as it rides over the detent plate (Ref. Fig. 501).

R 2. Equipment and Materials

R Push-Pull Gage, DPP-30, Chatillon Co. Kew Gardens, NY City, NY, or equivalent

R Rigpin, PN B994, or equivalent

R Lock-wire, Fed Spec QQ-W-390, 0.032 inch diameter, or equivalent

R Mirror, Round (approximately 1.0 inch diameter)

R Grease, General Purpose, MIL-G-23827, or equivalent.

R 3. Referenced Procedures

R	24-00-00	Electrical Power - Maintenance Practices
R	52-12-00	Passenger Door Actuation System - Description and Operation
R	52-12-00	Passenger Door Actuation System - Adjustment and Test

R 52-12-24 Passenger Door Handle - Removal and Installation

R 52-12-26 Lock Mechanism - Adjustment and Test

R 4. Adjustment/Test

R A. Passenger Door Inner Handle Spring-back Check

R (1) Turn on electrical power (Ref. 24-00-00).

R (2) On galley left circuit breaker panel, zone 131, verify
R the following circuit breakers are closed:

R PASS. DOOR ACTUATOR - AFT - LH(A2), RH(A5)

R PASS. DOOR ACTUATOR - CENTER - LH(A8), RH(A11)

R PASS. DOOR ACTUATOR - FORWARD - LH(A14), RH(A17)

R PASS. DOOR - CONTROL - LH&RH - FWD(A19), CTR(A20),
R AFT(A21)

R WARNING: OPERATION OF PASSENGER DOOR INNER HANDLE TO FULL
R DOWN POSITION WITH EVACUATION SLIDE SELECTOR LEVER
R IN ENGAGE POSITION WILL DEPLOY EVACUATION SLIDE.

R (3) Place evacuation slide selector lever in DETACH
R position.

R (4) Electrically open passenger door.

R (5) Remove cover over passenger door inner handle.

R (6) Pull inner handle full down to operate door against
R upper bumper stops.

R (7) Remove rubber boot which surrounds inside handle for
R access to backside of handle.

R (8) With door full open against bumpers, pull passenger
R door inner handle to full down position. Observe and
R feel for door handle movement in up direction.

R (9) Door handle spring-back in up direction must not exceed
R 0.125 inch. When spring-back is evident, spring
R plunger ball must not be allowed to move out of detent
R groove. Observe detent with mirror to verify.

R (10) To measure inner handle spring-back, perform the
R following:

R (a) Place one end of scale against inner passenger door handle bezel or support structure.

R (b) Measure movement at edge of "pull down" decal on end of inner handle. Take measurement when inner handle is held down and released.

R (11) When inner handle spring-back is present, disconnect lockpin push-pull cable and recheck for spring-back. If spring-back was eliminated, increase cable length as required to correct excessive spring-back condition and recheck lockpin rig (Ref. 52-12-26).

R (12) If inner handle spring-back was not eliminated, disconnect push rod at actuator clutch release and recheck for spring-back. If spring-back was eliminated, readjust actuator clutch release (Ref. Para. 4C).

R (13) Lock all control rod ends with jamnuts and lock-wire. Verify tab on control rod locking device is indexed on aft side of each control rod assembly to avoid interfering with cable assembly.

R (14) Perform Inner Handle Pull Load Check (Ref. Para. 4B).

R B. Inner Handle Pull Load Check

R (1) Turn on electrical power

R (2) Verify circuit breakers closed [Ref. Para. 4A(2)].

R (3) Operate door to closed position.

R CAUTION: OPERATION OF PASSENGER DOOR INNER HANDLE TO FULL DOWN POSITION WITH EVACUATION SLIDE SELECTOR LEVER IN ENGAGE POSITION WILL DEPLOY EVACUATION SLIDE.

R (4) Place evacuation slide selector lever in DETACH position.

R (5) Attach Push-Pull Gage to inside handle with a wire bridle.

R (6) Using Push-Pull Gage, pull handle from full up stop to full down stop in one slow continuous movement. Gage reading must not exceed 25 pounds. Take reading until door starts to open.

R NOTE: Pulling direction should be in a direction at right angles to handle rotational arc.

R (7) If pull exceeds 25 pounds, all control rod pivot bearings should be disassembled and lubricated with all purpose grease after the following pull checks are made.

R (8) Remove trim panel from around door control panel for access to backside of handle.

R (9) Move handle to full up position and disconnect actuator push rod at actuator clutch control rod arm (Ref. Fig. 501).

R (10) With door in full up position move inner handle to full down position (third detent).

R (11) Using Push-Pull Gage move handle in an upward direction out of full down position (third detent). Verify force required at end of inner handle is between 6 to 12 pounds.

NOTE: Pushing direction should be in a direction at right angles to handle rotational arc.

R (12) Move handle to full up (stowed) position (first detent).

R (13) Using Push-Pull Gage move inner handle in a downward direction out of full up (stowed) position (first detent). Verify force required at end of handle is between 6 to 12 pounds.

R (14) Move inner handle to center position (second detent).

R (15) Using Push-Pull Gage move inner handle in a downward direction out of center position (second detent). Verify force required at end of handle is between 6 to 12 pound.

R (16) Move inner handle to position between full up detent and center detent (spring plunger ball is not in groove).

R (17) Using Push-Pull Gage, move inner handle to center detent position. Verify force required at end of handle does not exceed 3.5 pounds.

R (18) If any of above push or pull test requirements were not satisfactory, proceed as follows:

(a) If force required to move handle is less than six pounds, perform Steps (24) and (25) then repeat Steps (10) through (17).

R (b) If force required to move handle is more than 3.5 R pounds perform Steps (19), (20), (21), and (22) R then repeat Steps (10) through (17).

R (19) Remove arm with detent plate from handle and visually R check condition of detent plate and spring plunger ball R for pitting or excessive wear.

R (20) With detent plate removed, verify force required to R move inner handle does not exceed 0.5 pound (2 lb in.) R at end of handle using Push-Pull Gage.

R (21) If force required to move inner handle exceeds 0.5 R pounds (2 lb in.), visually check handle shaft for R straightness and support lugs for alignment. Lubricate R handle shaft with general purpose grease and reinstall R handle.

R (22) Install arm with detent plate.

R (23) If detent plate is replaced, also replace spring R plunger. Verify replacement spring plunger has orange R dot on screw driver end.

R (24) To increase door inner handle detent forces, decrease R clearance between spring plunger and detent plate. A R minimum clearance of 0.002 inch must be maintained R between spring plunger and detent plate (Ref. Fig. R 501).

R (25) To decrease door inner handle detent forces, increase R clearance between spring plunger and detent plate. A R maximum clearance of 0.005 inch must be maintained R between spring plunger and detent plate.

R NOTE: If after adjusting spring plunger, proper door R handle detent forces cannot be met, replace both R detent plate and spring plunger. Verify R replacement spring plunger has orange dot on R screwdriver slot end.

R (26) If new detent plate and spring plunger are installed, R operate door inner handle 20 times from stowed to full R down positions. Repeat Steps 4B(10) through 4B(17).

R (27) Connect actuator push rod at passenger door handle.

R (28) Place door inner handle in full up position and verify R spring plunger ball is in first detent, and stop bolt R on pan assembly contacts stop on passenger door inner R handle. Adjust stop if necessary.

R (29) Place door inner handle in full down position and verify spring plunger ball is in third detent and door inner handle cam follower arm is against inner handle stop (open position).

R (30) Place passenger door inner and outer handles in full down position (third detent).

R (31) Move passenger door outer handle in an upward (closing) direction until contact is made with exterior push button handle. Verify maximum force required to move outer door handle does not exceed 0.5 pound.

R (32) If force required to move passenger door outer handle exceeds 0.5 pound, verify clearance of 0.005 to 0.010 inch exists between idler arm spacer and thrust washer and check condition of passenger door outer handle shaft and bushings. If necessary, adjust clearance by using laminated shim washers and/or repair wear surfaces and lubricate with general purpose grease before reassembly.

R WARNING: INSTALL BOOT WITH SLOT OPENING DOWN.

R (33) Install boot and trim around passenger door inner handle.

R (34) Install cover over door handle.

R (35) Perform operational test, emergency modes, from inside and outside aircraft (Ref. 52-12-00).

R (36) Turn off electrical power (Ref. 24-00-00).

R C. Passenger Door Handle Control System - Rigging

R (1) Before rigging door handle verify the following:

R (a) Electrical power on (Ref. 24-00-00).

R (b) Circuit breakers closed as described in Paragraph 4A(2).

R WARNING: OPERATION OF PASSENGER DOOR INNER HANDLE TO FULL DOWN POSITION WITH EVACUATION SLIDE SELECTOR LEVER IN ENGAGE POSITION WILL DEPLOY EVACUATION SLIDE.

R (c) Evacuation slide selector lever in DETACH position.

R R (d) Passenger door full open against bumper stops [Ref. Step 4A(6)].

R R (e) Trim around handle removed for access to handle link rods.

R R R (2) Verify door inner and outer handles are fully stowed (passenger door outer handle stowed and latched), as follows:

R R (a) Verify inner handle is in fully stowed position (first detent) and contacts inner stop bolt.

R R (b) Readjust stop bolt if required, and lock adjustment with jamnut.

R R (c) Install rigpin (Ref. Fig. 502). Move cam in or out as required to insert rigpin.

R R R (d) During rigging procedures, lubricate all accessible pivot bolts with general purpose grease when pivot bolts are disconnected.

R R R (3) Connect actuator push rod at passenger door handle actuator clutch control rod arm (Ref. Fig. 501) as follows:

R R R (a) Adjust control rod lower rod end to length required to install rod end in crank assembly with bolt, washers, and nut.

R (b) Remove rigpin.

R R (4) Pull inner handle down to center position (second detent).

R R R R R (5) With inner handle in "center detent" position, measure and record distance between actuator housing rigpin hole and actuator cam rigpin hole. Measurement must be 0.58 (±0.05) inch (Ref. Fig. 502). If not, readjust linkage as follows:

R R R R R WARNING: ACTUATOR CAM MUST BE LIMITED TO MAXIMUM STROKE OF 0.63 INCH WITH PASSENGER DOOR INNER HANDLE IN CENTER POSITION (SECOND DETENT), OR ACTUATOR CLUTCH MAY BE INADVERTENTLY RELEASED ALLOWING COUNTERBALANCE TO DRIVE DOOR OPEN.

R R (a) Determine amount and direction of adjustment required.

R NOTE: Each 1/2 turn of rod end provides approximately 0.020 inch adjustment. If distance between rigpin holes was too short, turn rod end in; if distance was too long, turn rod end out.

R (b) Disconnect actuator cam rod end from crank at actuator; adjust as required.

R NOTE: Limit adjustment to that required to maintain visibility of actuator cam in rod end inspection hole.

R (c) If required adjustment cannot be accomplished at actuator cam rod end (because of rod end inspection hole requirement, or because rod end bottoms), additional adjustment can be made at control rod end at lower or upper end of actuator pushrod.

R (d) Reconnect control rod with bolt, washers, and nuts.

R (6) Move inner handle to full down position (third detent). Measure and record distance between actuator housing rigpin hole and actuator emergency brake release cam rigpin hole. Measurement must be 1.09 (±0.14) inch (Ref. Fig. 502). If not, readjust linkage as follows:

R WARNING: ACTUATOR CAM MUST BE LIMITED TO MAXIMUM STROKE OF 1.23 INCH WITH PASSENGER DOOR INNER HANDLE IN FULL DOWN POSITION (THIRD DETENT) OR ACTUATOR CLUTCH MAY RE-ENGAGE AND PREVENT DOOR FROM BEING DRIVEN OPEN BY COUNTERBALANCE.

R (a) Determine amount and direction of correction necessary; readjust actuator cam rod end as described in Steps 4C(5)(b) through (c).

R (7) Recheck measurements made in Steps 4C(5) and (6) and readjust as required to attain referenced measurements.

R (8) Fully stow passenger door inner and outer handles.

R (9) Move inner handle to center position (second detent) and verify lockpin is withdrawn a minimum of 0.45 inch (Reference 52-12-26).

R (10) Fully stow inner and outer handles.

R (11) Move door outer handle until girt blade at floor is
R disengaged. Inner handle must remain in full stowed
R position.

R (12) Move passenger door outer handle until inner handle is
R in center detent position. Verify that lockpin is
R pulled a minimum of 0.45 inch.

R (13) Move door outer handle to full down position and verify
R handle moves to full down position (third detent).

R (14) At actuator cam rod end jamnut, verify clearance
R between jamnut and actuator as follows:

R (a) Move door inner handle to full up position (first
R detent).

R (b) Check for a minimum of 0.03 inch clearance between
R actuator cam jamnut and actuator housing.

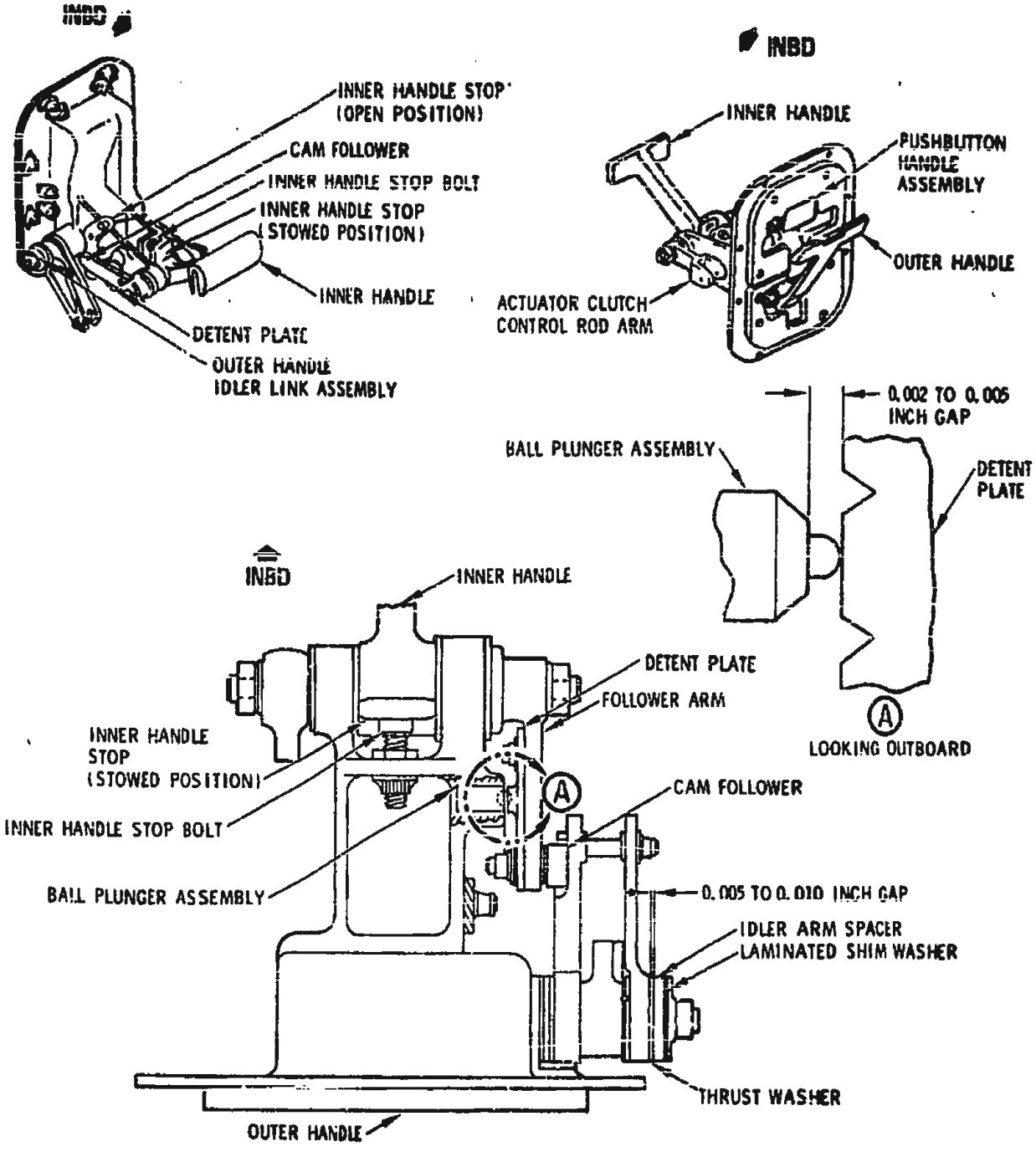
R (c) If jamnut is too close to actuator housing,
R correct condition by re-adjusting rod ends at
R actuator cam and lower end of crank assembly [Ref.
R Steps 4C(4) through (8)].

R (15) Install trim around door inner handle.

R (16) Install cover over door handle.

R (17) Perform operational test, emergency modes, from inside
R and outside aircraft (Ref. 52-12-00).

R (18) Turn off electrical power (Ref. 24-00-00).



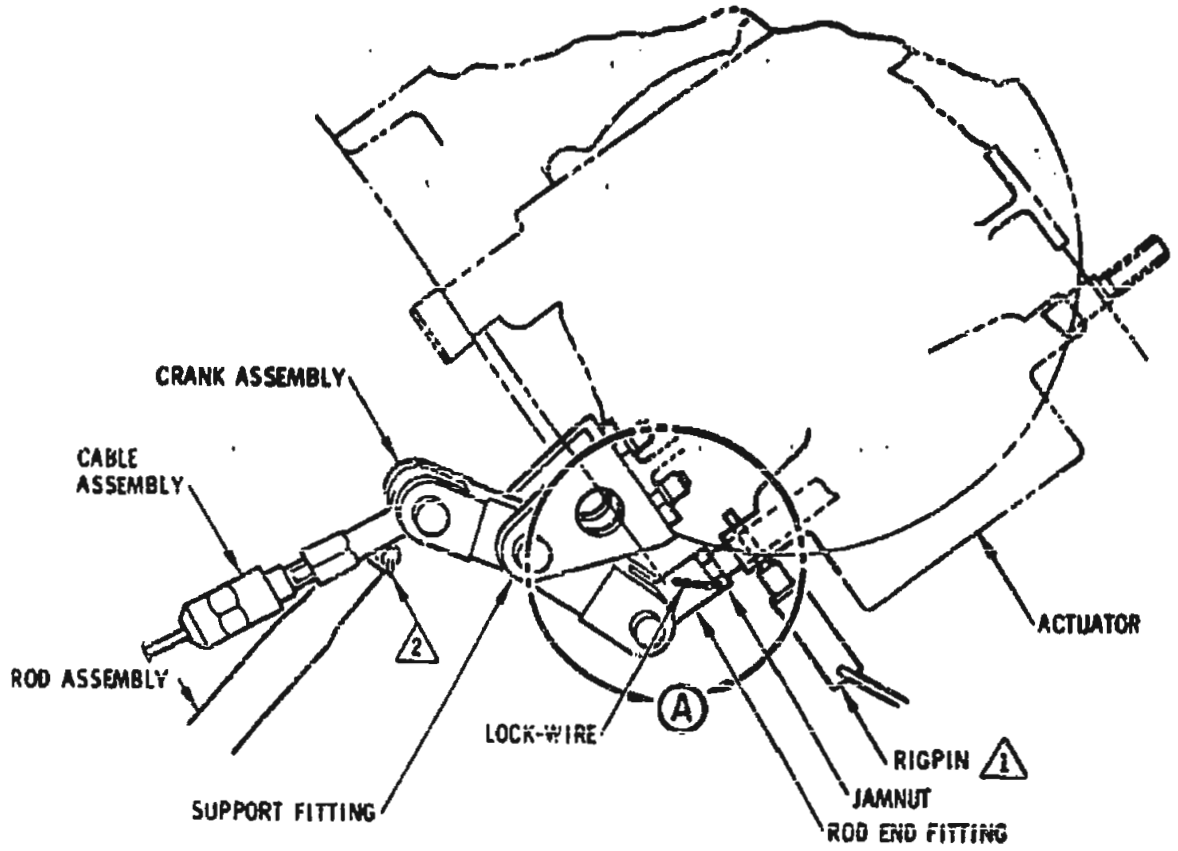
M1-0001-52-015

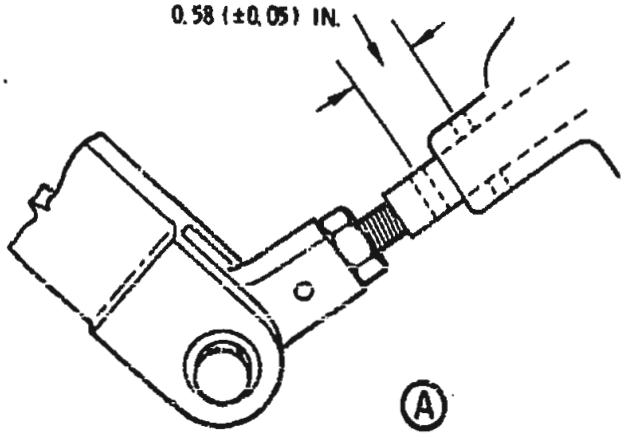
R
R

Passenger Door Handle Rigging
Figure 501

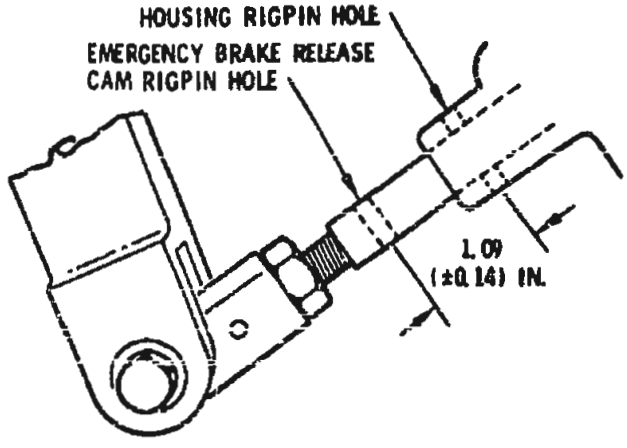
EFFECTIVITY: ALL

002B





WITH INNER HANDLE IN SECOND DETENT



WITH INNER HANDLE IN THIRD DETENT (HANDLE FULL DOWN)

NOTE

1 RIGPIN USED DURING INSTALLATION ONLY

2 **CAUTION** TABS ON LOCKING DEVICE MUST BE INDEXED ON ROD ASSEMBLY TO AVOID ANY POSSIBILITY OF FOULING WITH CABLE ASSEMBLY

Mi-0001-52-320

R Actuator Emergency Brake Release Cam Rigging Adjustment
R Figure 502

PASSENGER DOOR LOCK MECHANISM SOLENOID - MAINTENANCE PRACTICES

1. General

A door lock mechanism solenoid is located below the counterbalance, above and aft of each passenger entry door.

The solenoid cleaning procedures are the same at all door locations.

2. Equipment and Materials

Non-oily solvent, Methyl Ethyl Ketone (MEK), Federal Specification TT-M-261, or 1,1,1 Trichloroethane, Alcohol, or equivalent

Wiping cloths (cotton), clean-dry, oil-free

Cotterpin, MS24665-149

3. Maintenance Practices

A. Cleaning

(1) Close door.

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

(2) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breaker PASS DOOR CONTROL (Ref. 52-12-00, Table 501).

(3) Tag electrical and manual door controls.

(4) Gain access to applicable door lock mechanism solenoid by opening panel, or removing sidewall trim above and aft of door (Ref. Fig. 401).

(5) Remove cotterpin, washer, and flathead pin that attaches solenoid plunger to lock mechanism clevis. Retain washer and flathead pin for reinstallation.

(6) Free the clevis from the plunger end, and pivot clevis-link assembly out and away from area directly forward of solenoid.

(7) Inspect body of solenoid to determine supplier part number imprinted there:

(a) Part numbers 6249 and 6249-1 have plungers specially matched to solenoid bases. Plungers are not interchangable and require special care in removal and cleaning to avoid damage to the critical probe-tips.

(b) Part numbers 6328 and 6328-1 have interchangeable plungers without probe-tips.

(8) Swab forward (plunger-end) of solenoid with clean cotton wiping cloth soaked in non-oily solvent (Ref. Para. 2), to remove any collected dirt and/or oil film. Wipe dry with clean, dry cloth.

(9) Carefully withdraw plunger from solenoid base, avoiding contact of plunger shaft with other metal components in surrounding area.

(10) Dip plunger in non-oily solvent bath for 10 to 15 seconds (Ref. Para. 2).

(11) Wipe dry and lint-free with clean, dry cotton cloth (Ref. Para. 2).

(12) Wipe out interior of solenoid cylinder with cloth dampened with solvent.

NOTE: Avoid actually wetting interior of solenoid base cylinder.

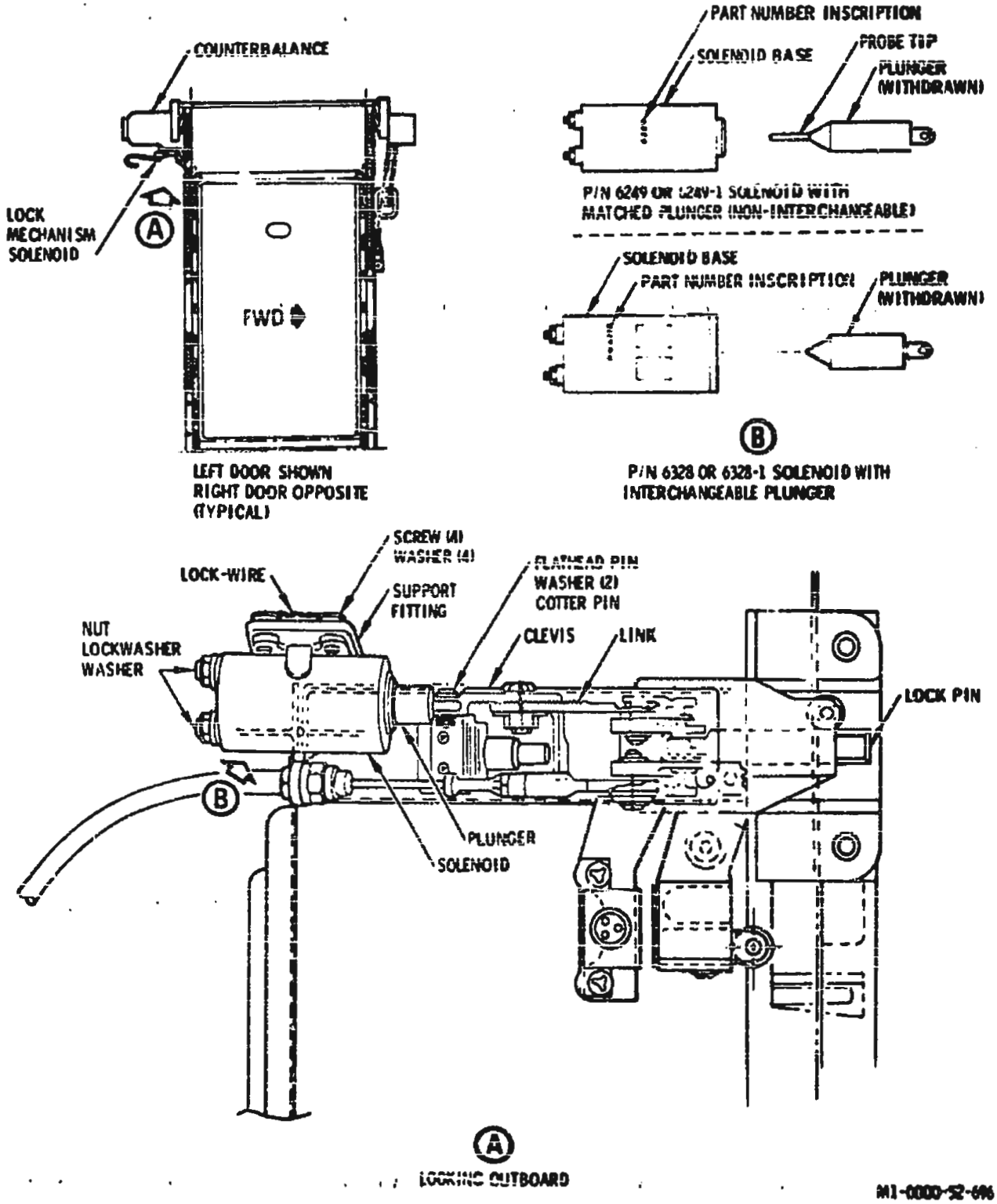
(13) Carefully reinsert plunger into solenoid base cylinder.

(14) Pivot lock mechanism clevis-link assembly back into alignment with plunger end.

(15) Attach solenoid plunger to clevis using flathead pin, washers, and new cotter pin.

(16) Close or reinstall access panel and sidewall trim, as required.

(17) Close circuit breaker [Ref. Step 3A(2)], and remove tags from door electrical and manual controls.



Lock Mechanism Solenoid-Maintenance Practices
Figure 201

EFFECTIVITY: ALL

001B

PASSENGER DOOR LOCK MECHANISM SOLENOID - REMOVAL AND INSTALLATION

1. General

A door lock mechanism solenoid is located below the counterbalance, above and aft of each passenger entry door.

The solenoid removal and installation procedures are the same at all door locations.

When replacing a solenoid, always check markings on solenoid base body to determine manufacturer's part number. A P/N 6249 or 6249-1 solenoid must include the plunger specifically matched with that solenoid base. P/N 6328 and 6328-1 solenoids have interchangeable plungers (Ref. Fig. 401). Solenoid plunger should not be lubricated.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Cotterpin, MS24665-149

3. Referenced Procedures

52-12-00 Passenger Door Actuation System - Adjustment and Test

52-12-26 Lock Mechanism - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Close door.

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

(2) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breaker PASS DOOR CONTROL (Ref. 52-12-00, Table 501).

R

(3) Tag electrical and manual door controls.

(4) Gain access to applicable door lock mechanism solenoid by opening panel, or removing sidewall trim above and aft of door (Ref. Fig. 401).

(5) Remove electrical wire lugs from solenoid and identify for reinstallation.

(6) Remove cotterpin, washer, and flathead pin that attaches solenoid plunger to lock mechanism clevis.

CAUTION: RETAIN SOLENOID PLUNGER IN SOLENOID TO PREVENT DAMAGE TO PLUNGER.

(7) Using cord or equivalent, tie solenoid plunger to solenoid.

(8) Remove four screws and washers that attach solenoid to support bracket, then remove solenoid and plunger.

B. Installation

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

(1) Verify that circuit breaker is open and tagged, and door manual and electrical controls are tagged [Ref. Steps 4A(2) and (3)].

CAUTION: RETAIN SOLENOID PLUNGER IN SOLENOID TO PREVENT DAMAGE TO PLUNGER.

R NOTE: Type 6249 or 6249-1 solenoid and plunger are
R supplied as matched sets and must be replaced
R together. Only type 6328 or 6328-1 solenoid
R allows for interchangeable plungers (Ref. Fig.
R 401).

(2) Install solenoid and plunger assembly with four screws and washers. Lock-wire screws.

(3) Attach solenoid plunger to lock mechanism clevis using flathead pin, washers, and cotterpin.

R CAUTION: DO NOT LUBRICATE SOLENOID PLUNGER.

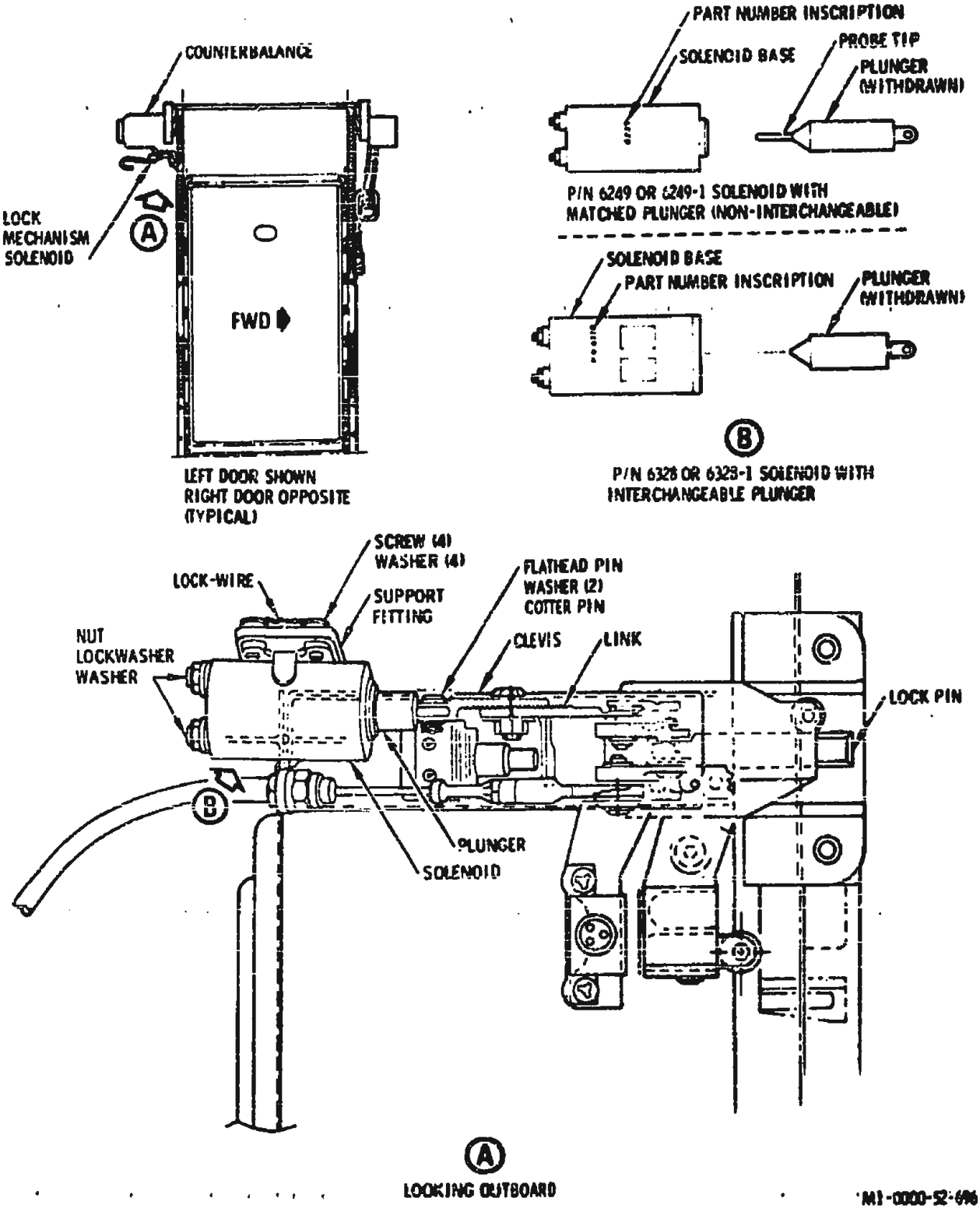
(4) Install electrical wire lugs as identified [Ref. Step 4A(5)]; torque terminal nuts to 7.5 to 10 pound inches (do not overtorque).

(5) Check solenoid/lock mechanism lockpin adjustment and
R operation. (Ref. 52-12-26, Adjustment and Test).

(6) Adjust lock mechanism lockpin, or warning proximity switch, if required (Ref. 52-12-26, Adjustment and Test).

(7) Close or reinstall access panel and sidewall trim, as required.

(8) Close circuit breaker [Ref. Step 4A(2)], and remove tags from door electrical and manual controls.



R Lock Mechanism Solenoid - Removal and Installation
R Figure 401

EFFECTIVITY: ALL

001B

PASSENGER DOOR LOCK MECHANISM - ADJUSTMENT AND TEST

1. General

This procedure provides rigging adjustments necessary to ensure the operation of door uplock/downlock and warning light mechanisms.

2. Equipment and Materials

Rigpin, PN B994, or equivalent

3. Referenced Procedures

	23-41-00	Cabin/Galley Interphone System - Adjustment and Test
R	52-12-00	Door Actuation System - Adjustment and Test

4. Adjustment/Test

A. Uplock/Downlock Rigging Adjustments

CAUTION: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(1) Close door and open and tag circuit breakers as follows:

(a) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breakers PASS DOOR ACTUATOR and PASS DOOR CONTROL.

(b) Electrical and manual door controls are tagged.

(2) Remove rod end from bellcrank.

NOTE: Bushing in rod end slot is loose when pin is removed.

(3) Verify that spring-loaded bellcrank holds lock pin flange in contact with pin support fitting (Ref. Fig. 501).

(4) Verify that tang on clevis is on aft side of, and not contacting stop angle, and oriented to catch on stop before solenoid plunger disengages from solenoid.

CAUTION: DO NOT LUBRICATE SOLENOID PLUNGER.

(5) Adjust serrated surfaces of clevis and link to position solenoid plunger and slot as shown. Push link toward solenoid, to remove slack in linkage, when measuring protrusion of plunger from solenoid.

(6) Adjust serrated surface of striker on clevis to attain dimension shown.

(7) Adjust rod end so that slot is in position shown and lock pin flange contacts support fitting. Torque jamnut.

NOTE: Rod end must be threaded on control cable end far enough to block inspection hole.

(8) Connect rod end to bellcrank with bushing pin and new cotter pin.

(9) Verify protrusion of lock pin through door track as follows:

CAUTION: WHEN PULLING DOOR TRACK, TAKE CARE NOT TO DEFORM TRACK IN ANY WAY.

(a) Pull aft door track forward against door track guide plate on pinion gear and hold.

(b) Verify that lock pin protrusion from forward surface of door track is 0.13 inch minimum. If protrusion is less than 0.13 inch, verify that lock pin flange contacts pin supporting fitting. If 0.13-inch dimension cannot be obtained, incorporate Service Bulletin 52-047 which installs a longer pin.

(c) Push aft door track aft in vicinity of lock pin until track contacts track guide rollers.

(d) Verify that lock pin protrusion from forward surface of door track does not exceed 0.27 inch. If 0.27-inch dimension cannot be obtained, thread rod end farther onto control cable.

(e) Release track.

B. Door Warning Light Rigging Adjustment and Test

(1) Verify operation of door warning light on Flight Engineer/Second Officers annunciator panel and DOOR

OPEN light on pilots center instrument panel as follows:

(a) Position observer in flight station to observe door warning lights.

NOTE: Cabin/Galley interphone (Ref. 23-41-00) may be used for communication between flight station and any passenger door.

WARNING: IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN DEPLOYMENT OF EVACUATION SLIDE.

(b) Place evacuation slide selector lever in DETACH position.

WARNING: DO NOT PULL EMERGENCY PULL DOWN HANDLE WITH EVACUATION SLIDE SELECTOR LEVER IN ENGAGE POSITION.

(c) Remove plastic cover from emergency PULL DOWN handle and slowly pull handle until door warning light and DOOR OPEN light come on, as witnessed by observer in flight station.

(d) Verify that lock pin has withdrawn into track a minimum of 0.06 inch.

(e) With aft door track pulled forward against door track guide plate on pinion gear, verify that lock pin protrudes 0.04 inch minimum from forward surface of door track.

(f) If minimum protrusion of 0.04 inch is not obtained, adjust proximity switch farther from target.

(g) If pin travel is less than 0.06 inch, adjust proximity switch closer to target.

(h) Restow emergency PULL DOWN handle.

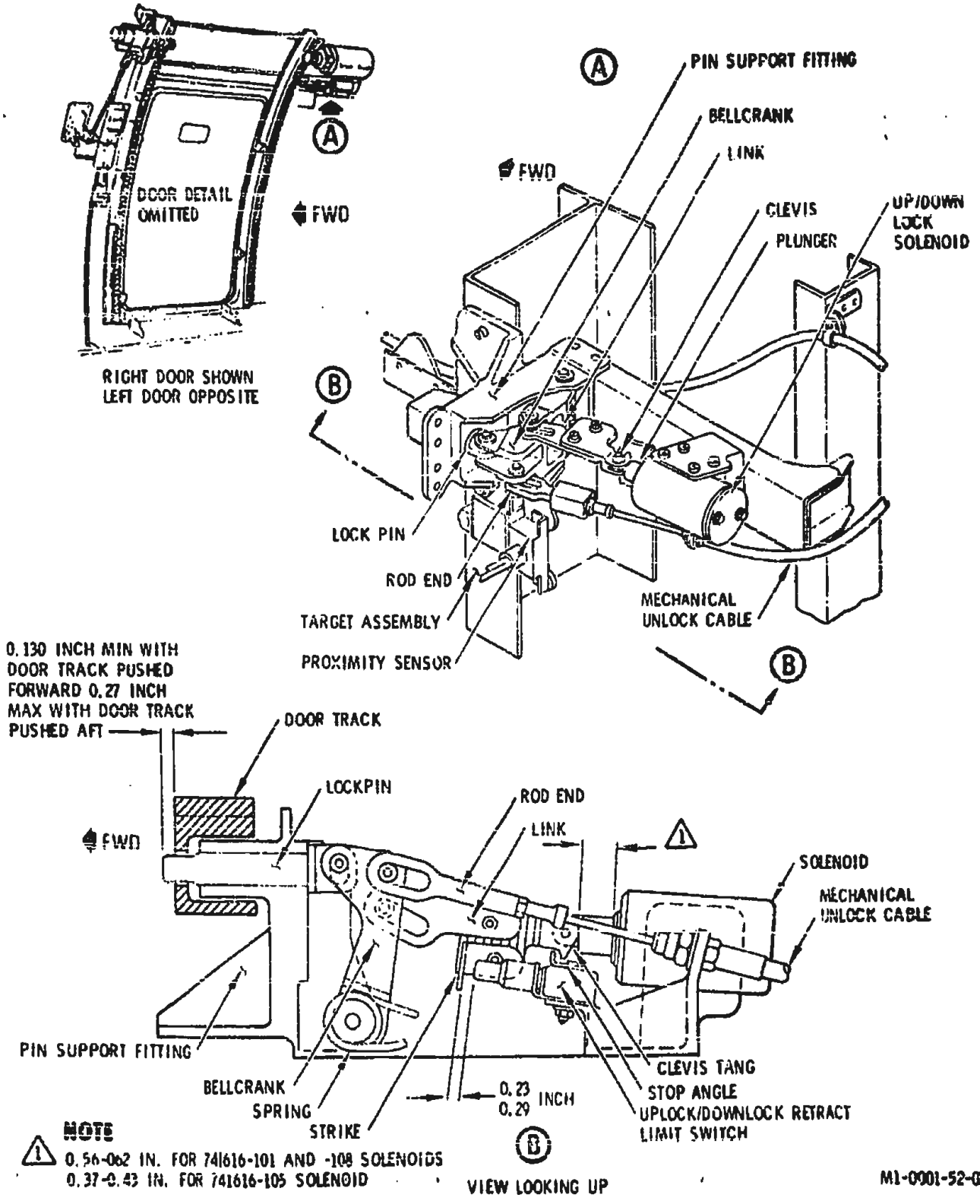
(i) Repeat Steps (a) through (h) until all dimensions are obtained.

(2) Repeat Steps 4A(9)(a) through 4A(9)(e).

(3) Remove tags and close circuit breakers opened in Step 4A(1).

(4) Remove tags from electrical and manual door controls.

(5) Verify door operation (Ref. 52-12-00).



R Passenger Door Lock Mechanism Rigging
R Figure 501

PASSENGER DOOR LOCK MECHANISM - INSPECTION AND CHECK

1. General

This procedure outlines quick check procedures necessary to ensure the operation of the uplock/downlock mechanism at each passenger door.

2. Referenced Procedures

	12-22-41	Passenger Door Lubrication
	52-12-01	Actuator - Removal and Installation
R	52-12-25	Lock Mechanism Solenoid - Maintenance Practices
	25-26-01	Ceiling Trim Door Panel - Removal and Installation

3. Inspection and Check

The operational check in this section are as follows:

Step A - Quick Check of Lock Pin Protrusion

Step B - Quick Check of Lock Pin Freedom of Motion

A. Quick Check of Lock Pin Protrusion

WARNING: DO NOT OPERATE PASSENGER DOOR WHILE INSPECTION AND CHECK PROCEDURES ARE BEING PERFORMED ON DOOR.

(1) On L1 door, use flashlight and mirror to inspect lock pin protrusion through aft door track as follows:

(a) Push spring-loaded trap door upward for access (Ref. Fig. 601).

(b) Verify pin protrudes through aft door track.

(2) On R1 door and all other passenger doors except L1 door, inspect pin protrusion through aft track as follows:

(a) Push spring-loaded trap door upward for access.

(b) Reach through trap door to feel pin protrusion through aft track.

B. Quick Check of Lock Pin Freedom of Motion

This check is used to verify that lock pin is free enough to be withdrawn from the door track when operated manually or electrically when door is in closed and locked position.

(1) With door closed and locked, check for lock pin freedom of motion as follows:

(a) Gain access to lock pin through spring-loaded trap door (Ref. 25-26-01).

(b) Manually depress (push in) lock pin and then release it. Verify that lock pin can be depressed freely, without binding and that it returns freely to its fully extended position in door track cutout.

(c) If any binding occurs between lock pin and door track, reclose door and repeat the above check.

(2) If lock pin does not operate freely as described, investigate the cause of binding as follows:

(a) Check lock pin for contact with cutout in track. If lock pin contacts roller in track cutout replace passenger door actuator (Ref. 52-12-01).

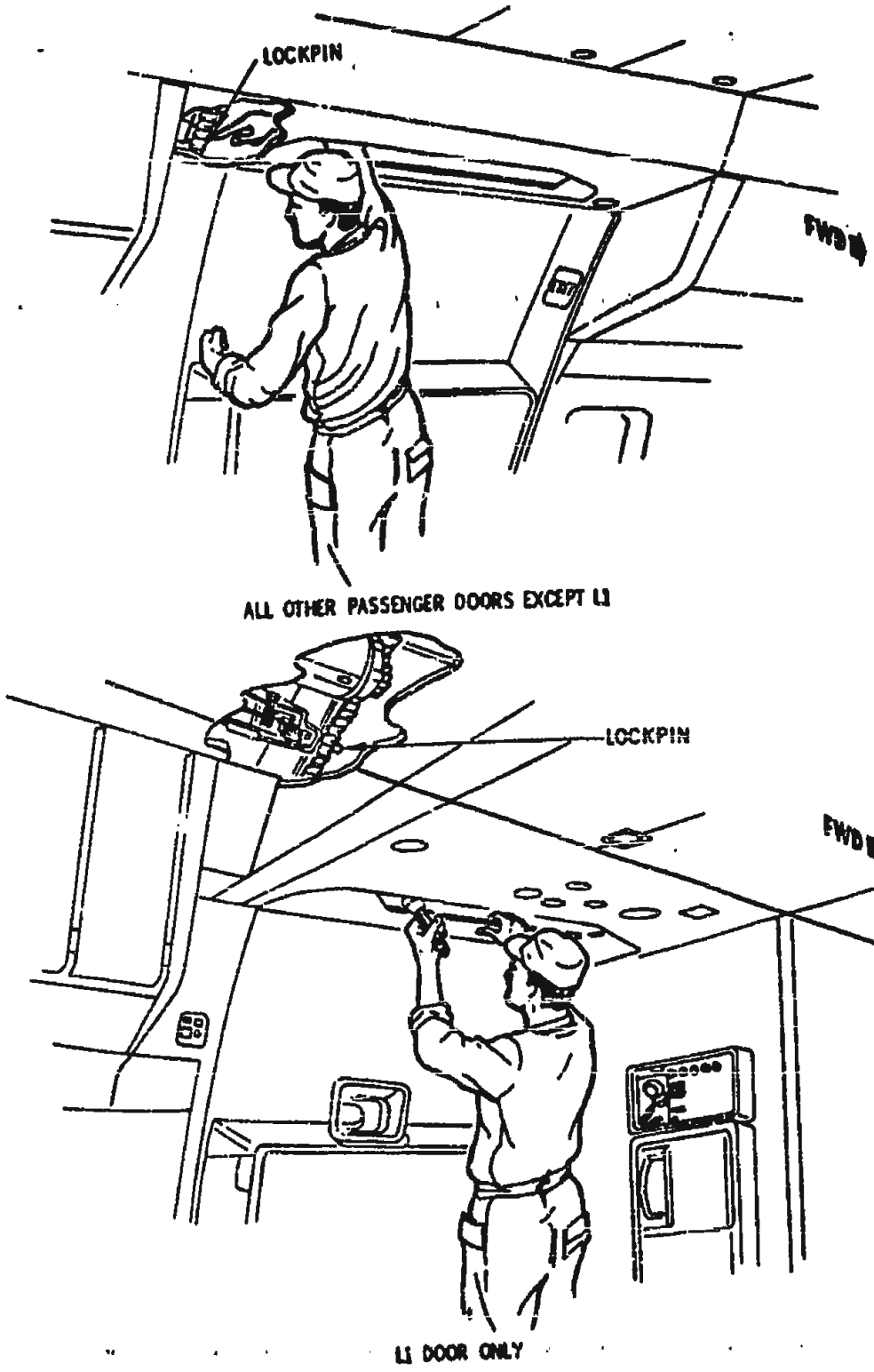
NOTE: Actuator "no-back" mechanism malfunction indicated.

(b) Check for binding of lock pin in pin support fitting. Verify fitting-to-pin interface is free of paint or other contamination.

(c) Check lock mechanism for evidence of binding and correct if necessary.

R R (d) Check lock pin for light oil film lubrication, lubricate if necessary (Ref. 12-22-41).

(e) Verify solenoid plunger and solenoid are free of lubricant and other contamination. (Ref. 52-12-25, Maintenance Practices for cleaning procedures).



R Passenger Door Lock Pin Inspection
R Figure 601

R EFFECTIVITY: ALL
R
0019

R PASSENGER DOOR LOCK MECHANISM CONTROL CABLE - REMOVAL AND
R INSTALLATION

1. General

A lock mechanism control cable is located above each passenger entry door. One cable end is attached to the door lock mechanism and the other end is attached to the control linkage to the door actuator actuation cam.

Cable routing differs slightly at each door location, however, cable replacement procedures are the same.

2. Equipment and Materials

Cotter pin, MS24665-149

3. Referenced Procedures

52-12-00 Door Actuation System - Adjustment and Test

52-12-26 Lock Mechanism - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Close door.

R WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

R (2) On galley left circuit breaker panel, zone 131, open
R and tag applicable passenger door circuit breaker PASS
R DOOR CONTROL.

(3) Tag electrical and manual door controls.

(4) Gain access to applicable lock mechanism control cable by opening panels and removing trim as required above the doorway and along the upper forward and aft sides of the door surround structure.

(5) Verify that inside handle is in full closed position.

(6) Lock counterbalance by rotating socket A in LOCK direction until socket B is in LOCK position. While rotating socket A, oscillate socket B to ensure engagement of worm shaft and worm gear (Ref. Fig. 401).

(7) At lock mechanism, disconnect control cable rod end fitting by removing flathead pin, bearing, and washer. Retain parts for reinstallation.

(8) At crank assembly located below door actuator, disconnect control cable rod end by removing nut, bolt, bearings and washers. Retain parts for reinstallation.

(9) Loosen jamnuts and remove rod end fitting from control cable terminal at both ends of cable.

(10) Loosen or remove cable clamp support screws as required to remove control cable from support clamps. Remove cable from support clamps.

B. Installation

(1) Verify that circuit breaker opened in Step A(2) is open and tagged.

(2) Remove jamnut and washer from both ends of control cable housing and retain for installation.

(3) Install control cable in clamps but do not tighten.

(4) Install both ends of control cable housing in support brackets using washers and jamnuts.

(5) Position control cable housing as required to distribute evenly without sharp bends along entire length. Maintain bend radius of over four inches. Then install, or tighten, cable support clamps with attaching hardware.

(6) Install jamnut and rod end fittings on control cable terminal fittings at both ends of control cable.

(7) At manual control rod end of cable (below the door actuator) turn rod end fitting onto control cable terminal until terminal threads are visible in rod end fitting inspection hole. Tighten jamnut.

(8) Connect control cable rod end fitting to manual control crank using bolt, bearings, washers and nut.

(9) At opposite end of control cable, install rod end fitting control cable terminal. Turn until terminal threads are visible in rod end fitting inspection hole.

(10) Adjust rod end fitting until it can be installed without slack in control cable as shown (Ref. Fig. 401).

(11) Install rod end fitting with flathead pin, bearing, washers, and cotter pin.

(12) Unlock counterbalance as follows:

(a) Rotate socket B counterclockwise for left doors and clockwise for right doors until backlash is noted.

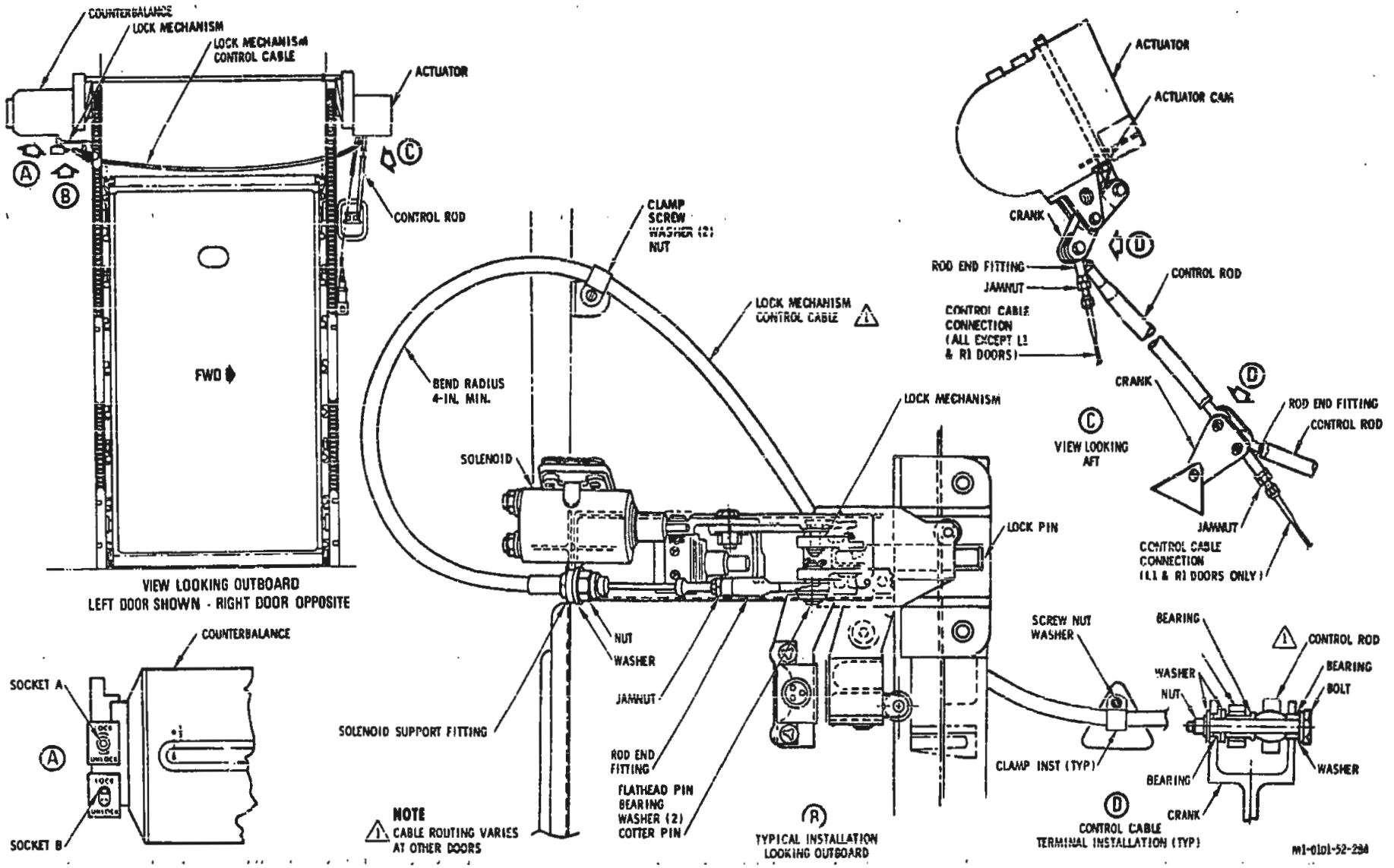
(b) Torque socket A in UNLOCK direction until socket B is in UNLOCK position and rotates freely.

(13) Perform lock mechanism adjustment and test (Ref. 52-12-26).

(14) Close access panels and install trim.

(15) Remove tags and close circuit breakers opened in Steps A(2) and (3).

(16) Verify door operation (Ref. 52-12-00).



Lock Mechanism Control Cable - Removal and Installation
Figure 401

R
R
001B EFFECTIVITY: ALL

PASSENGER DOOR ACTUATOR MOTOR CONTROL RELAY - REMOVAL AND INSTALLATION

1. General

Two control relays are located inside the control box of each passenger door actuator PN 672013-113, 119, or -121. Actuators PN 672013-123 or higher also have a brake relay mounted inside the control box.

The passenger door actuators are located above and forward of each passenger door.

This procedure provides information covering removal and installation of a control relay without prior removal of the actuator from the aircraft. Relay replacement procedures are identical at all actuator locations.

2. Equipment and Materials

Sealant, No. C136 (Stabond Corp., Gardena, California), or equivalent

Lock-wire Fed Spec. QQ-W-390, 0.020-inch diameter, or equivalent

3. Referenced Procedures

25-26-01	Forward, Mid and Aft Ceiling Trim Drop Panels - Removal and Installation
52-12-00	Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Door may be in any position between open and closed.

R WARNING: DO NOT OPERATE PASSENGER DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(2) On galley left circuit breaker panel, zone 131, open and tag applicable passenger door circuit breaker PASS DOOR ACTUATOR.

(3) Tag electrical and manual door controls.

(4) Gain access to applicable actuator as follows:

R (a) At L1 and R1 doors, lower ceiling panel inboard of the door, (Ref. 25-26-01).

(b) At all other passenger doors, except L/R1, the actuator is accessible through the sidewall storage cabinet forward of the door.

(c) When the actuator must be reworked with the door fully open and access for ceiling trim removal through the flipper door is not possible, removal of the hinge pins may be accomplished by reaching between the trim in the flipper door area and the door slide pack with a long screwdriver, or by removing the oxygen module over the attendants seat and reaching up between the door and trim panel.

NOTE: L4 and R4 emergency doors are not equipped with actuators.

(5) Note and record method of lock-wiring screws to facilitate assembly. Cut and remove lock-wire.

(6) Remove screws, washers, and case (Ref. Fig. 401).

(7) Remove nylon screws, washers and relays.

NOTE: On actuators PN 672013-123 or higher, a brake relay is supported by two screws which also support one side of a control relay. The brake relay is tethered by electical leads during control relay replacement.

Two nylon washers, serving as spacers, are located between the relay support flanges and the adjacent relay socket.

B. Installation

(1) Install control relays with two nylon washers on each screw, with washers located under relay mount flanges (Ref. Fig. 401).

NOTE: Indexing of relay is not required.

(2) On actuators PN 672013-123 or higher (with brake relay) four additional washers should be used. Two at each screw, between the brake relay support flange and the control relay flange.

NOTE: Cement, or equivalent, may be required to hold washers in place during installation.

(3) On actuators with a brake relay, verify that pad is positioned under brake relay.

(4) With all relays installed, apply sealant around flanged edge of cover and install case with screws and washers.

(5) Apply sealant around lower edge of case where it contacts control box housing.

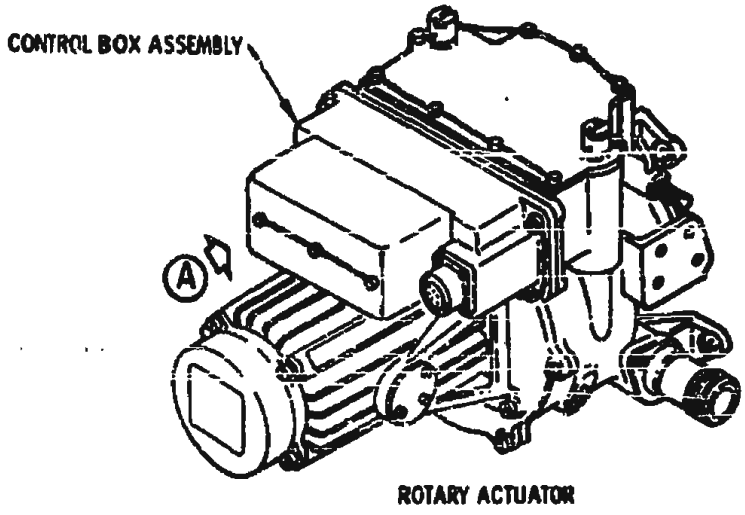
(6) Lock-wire case attachment screws.

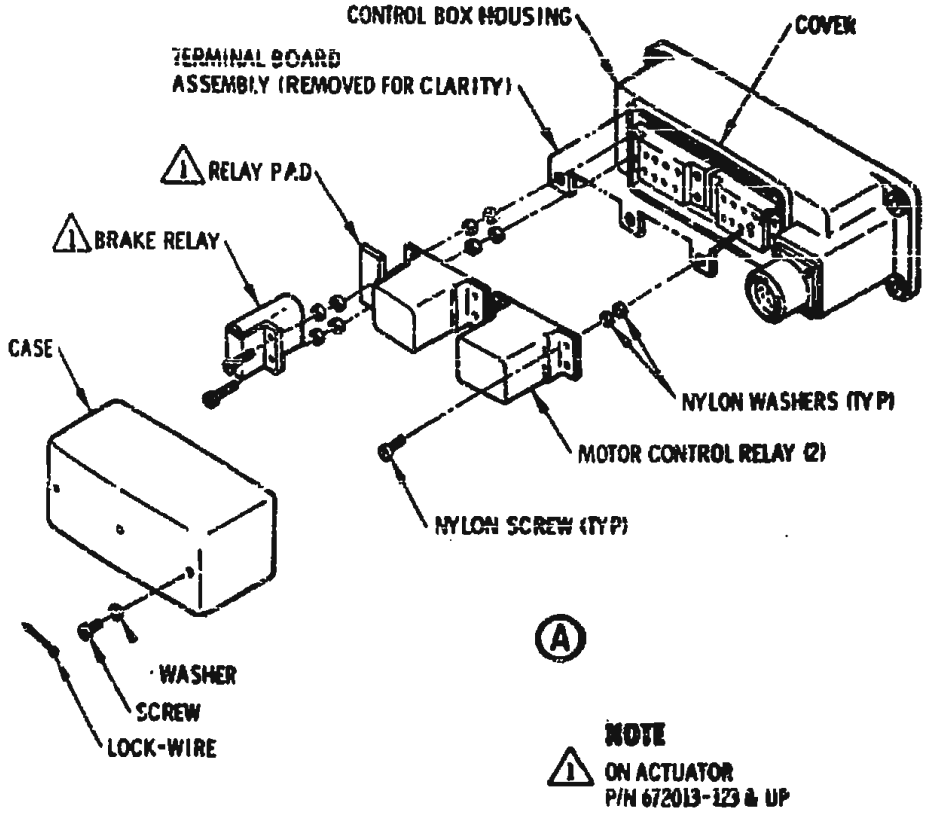
(7) Remove tags from electrical and manual door controls

(8) Remove tag and close circuit breaker opened in Step 4A(2).

R (9) Verify door operation (Ref. 52-12-00).

(10) Replace the trim removed in Step 4A(4).





M1-0100-52-447

R Entry Door Actuator Motor Control Relay
R Removal and Installation
R Figure 401

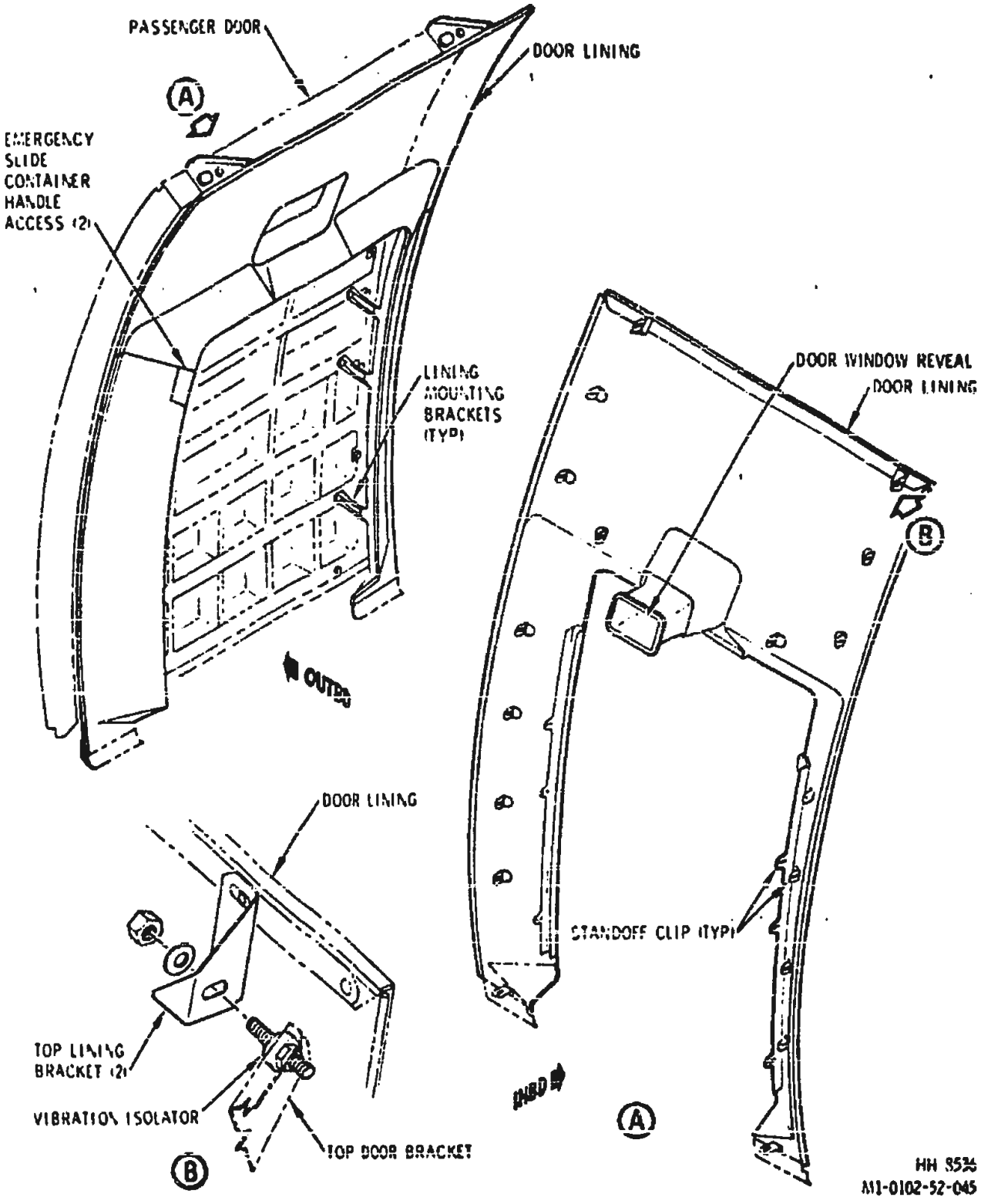
R

PASSENGER DOOR LINING - DESCRIPTION AND OPERATION

1. General

A nonstructural decorative lining (Ref. Fig. 1) covers the inboard side of the passenger door. The lining is constructed of a fibrous nylon honeycomb core covered with a resin-impregnated, glass-fiber skin. Aluminum brackets stiffen the lining. Threaded inserts set into the lining mount it to the door.

The center of the lower two-thirds of the lining is open to accept the evacuation slide container. A trap door at each upper corner of the opening permits access to the slide container latching mechanism when the container is installed. The trap door is spring loaded to the closed position.



R
R

Door Lining (Typical)
Figure 1

PASSENGER DOOR LINING - REMOVAL AND INSTALLATION

1. General

A decorative door lining is mounted on the inboard side of each passenger door. The removal and installation procedures for all door linings are the same.

2. Referenced Procedures

25-61-10 Evacuation Slide/Raft Assembly - Removal and Installation

52-12-00 Door Actuation System - Adjustment and Test

3. Removal/Installation

WARNING: SERIOUS INJURY CAN OCCUR IF PASSENGER DOOR IS OPERATED WHILE WORKING IN AREA OVERHEAD. TAG INNER AND OUTER DOOR HANDLES AND SWITCHES. REMOVE TAGS AFTER COMPLETION OF WORK IN AREA.

A. Removal

CR NOTE: If installed, remove and discard vinyl coated fabric shroud which was originally installed on side of cabin door between outboard face of door lining and the door structure. Also, remove any loose velcro tape used to attach shroud. Do not reinstall shroud.

(1) Open door approximately 3 inches (Ref. 52-12-00).

(2) Remove slide/raft assembly from inside of door (Ref. 25-61-10).

(3) Mark location of mounting screws in mounting bracket and standoff clip slots to keep butt line adjustment of lining.

(4) Remove nuts holding lining to brackets at top of door (Ref. Fig. 401).

(5) Remove screws at lining end of brackets.

(6) Move lining sideways to slide top brackets off shock mount stud and lift inboard away from door.

B. Installation

(1) Support lining in position against door standoff brackets and slide top bracket onto shock mount stud.

(2) Install screws and nuts in brackets and tighten on index marks.

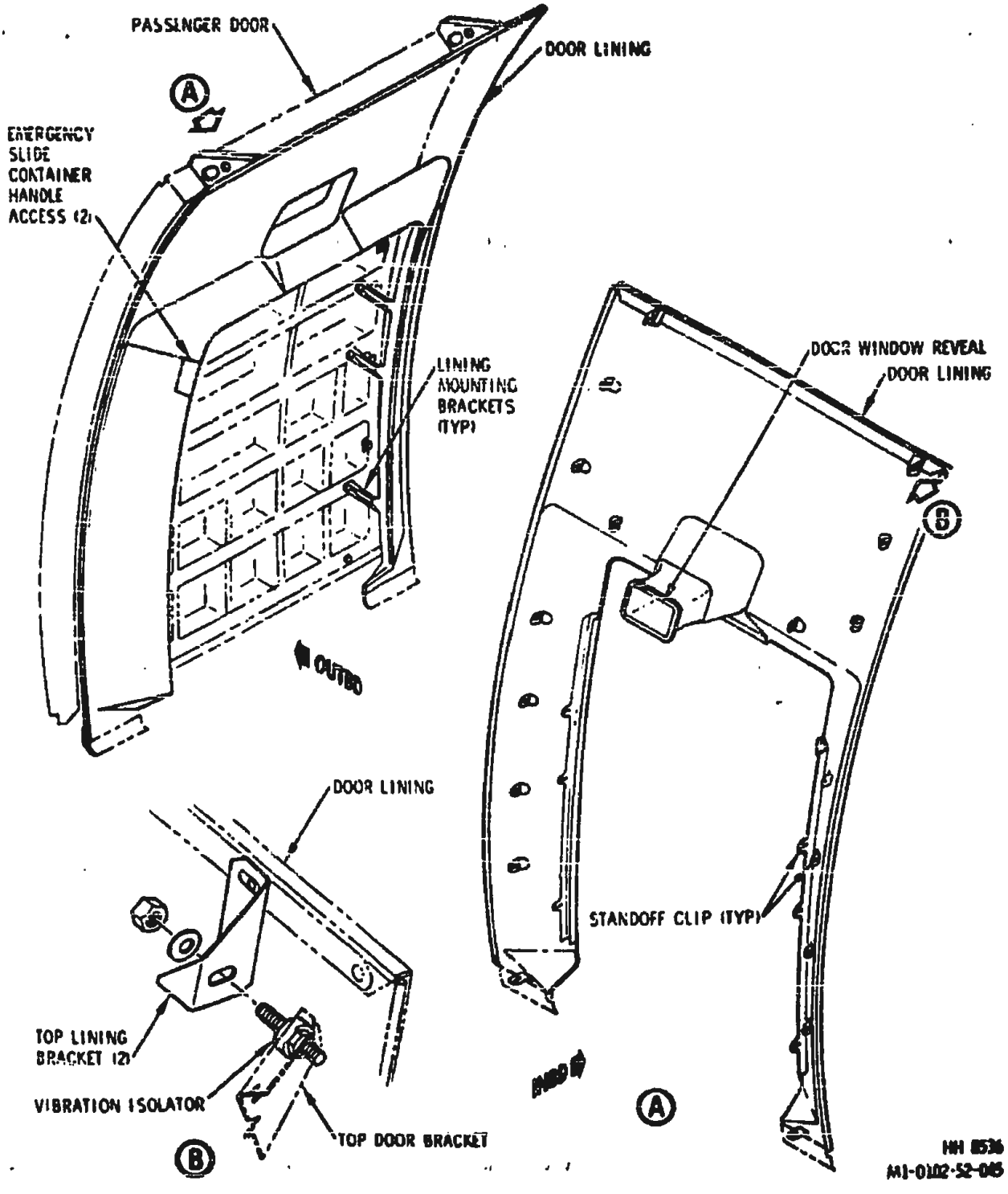
(3) Install nuts on shock mount studs at top of door.

(4) Operate door (Ref. 52-12-00) to verify clearances with surrounding trim.

(5) With door approximately 3 inches open, install slide/raft assembly (Ref. 25-61-10).

NOTE: Sloping surfaces of lining to be tangent to corner radii of slide container.

(6) Close door.



Door Lining - Removal and Installation
Figure 401

EMERGENCY EXIT - DESCRIPTION AND OPERATION

1. General

R Two emergency exit doors (Ref. 52-21-00) provide additional evacuation capability from the passenger compartment. The doors are actuated by a manual system from inside or outside the aircraft.

An emergency escape slide (Ref. 25-61-00) is mounted on the inboard side of each door. Each door is insulated with fire-retarding fiber glass blankets and covered on the inside with a decorative lining.

R A hatch (Ref. 52-23-00) is provided for emergency evacuation from the flight compartment.

EMERGENCY EXIT DOORS - DESCRIPTION AND OPERATION

1. General

R The L4 and R4 emergency exit doors (Ref. Fig. 1) are provided on the left and right sides of the aft fuselage at zones 835 and 845.

The doors are inward-opening units that are approximately 24 inches wide by 60 inches high.

The structural framework of the door consists of an outer frame, beams, formers, intercostals, skins, extrusions, and forgings of aluminum alloy.

The seven door beam assemblies are located approximately 9 inches apart. Fourteen door pressure-stop assemblies, one on each end of the door beams, transfer cabin air pressure loads on the door to the surrounding fuselage structure. The pressure-stop assemblies also align the door in the closed position.

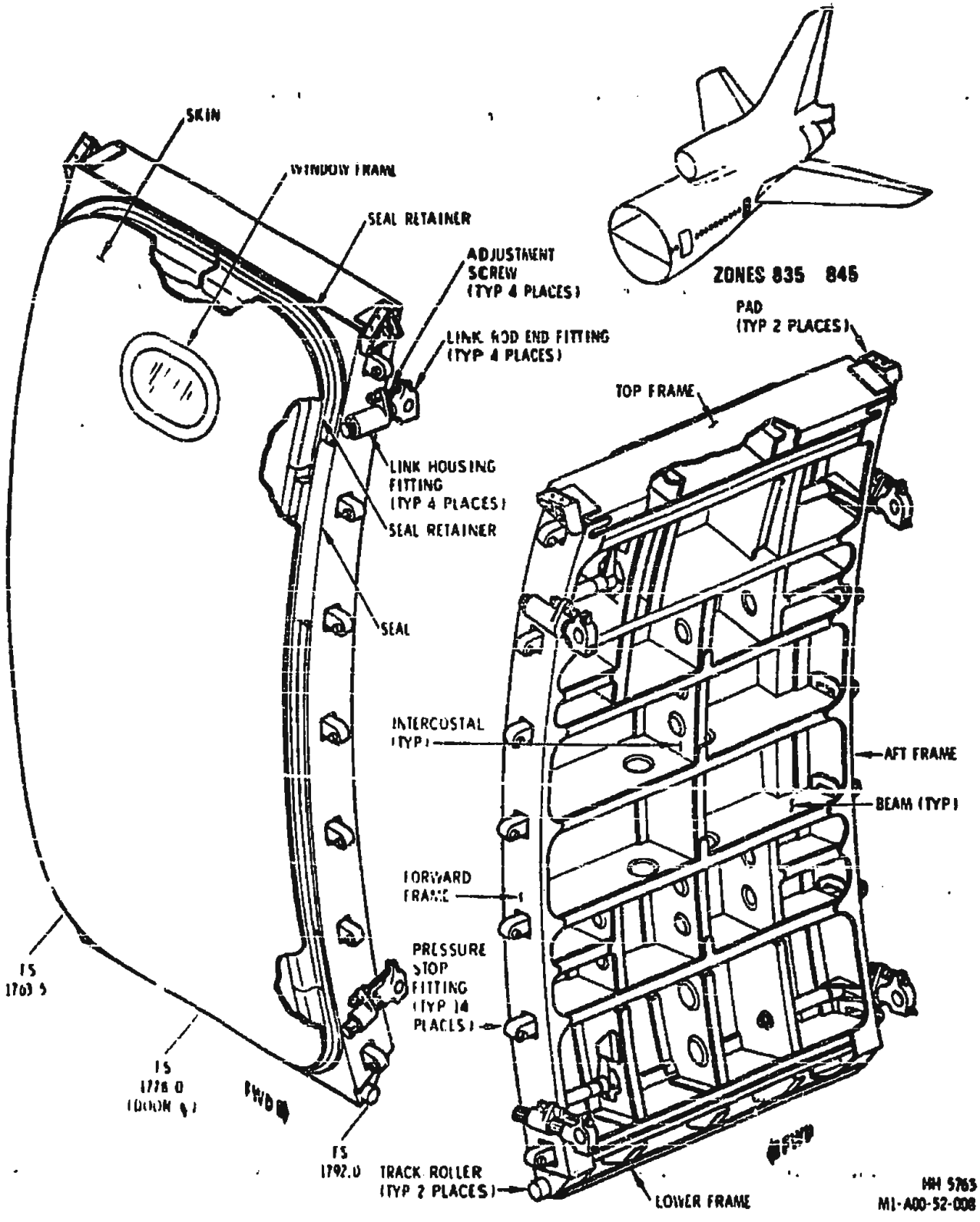
Each door has a window (Ref. 56-30-00).

A one-piece full-contoured door seal is attached to each door. The seal, made of silicone rubber, is hollow in cross section and is ventilated by holes. The seal is held in place by a one-piece silicone rubber seal retainer.

Two pivot link assemblies on each side of the door structure connect it to the door actuation tracks.

The two door tracks provide primary support for the door assembly and also for its actuation. The door tracks are machined from 7076-T6 aluminum alloy channel extrusions, and then anodized. Gear teeth are machined along the full length of the inboard track face to form a rack gear. The rack gear interfaces the actuator-driven door track pinion to provide door actuation. The two inner faces of the door track channel provide the bearing surfaces which contact the track rollers mounted on each side of the door structure.

All components of the door actuation system are located on the fuselage structure or on the fore and aft sides of the door.



Emergency Door
Figure 1

EMERGENCY EXIT DOOR - ADJUSTMENT AND TEST

1. Adjustment/Test - Emergency Exit Door

A. General

This procedure outlines the rigging adjustments necessary to position a door in the door opening so that the door will operate correctly. Steps to fair the door with the fuselage are included.

The procedure is applicable to each emergency exit door.

B. Equipment and Materials

Wedges and blocks

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Bubble protractor

R Metal Activated Sealing and Retaining Compound,
R MIL-S-22473D, Grade C, Loctite Corp., or equivalent

C. Referenced Procedures

52-21-52, Door Seal - Removal and Installation

52-22-00, Door Actuation System - Adjustment and Test

D. Rigging Adjustments

(1) Verify that the following has been performed:

(a) Door seal is installed (Ref. 52-21-52).

(b) Door pivot link rotational force does not exceed 10 lb in.

(c) Door controls are tagged.

(d) Rigpin is installed in counterbalance (Ref. Fig. 501).

(e) Door tracks are secured with C-clamps against track guide rollers immediately above and below door pivot link fitting attach points.

(f) Cross-drive flexible shaft is disconnected at one end.

(2) Remove spring clips from pivot nuts A and B and back off nuts until flush with ends of threads. Retain spring clips.

(3) Remove wire locks from door pressure stop bolts and back off bolts until flush with threaded inserts. Retain wire locks.

(4) Remove shims from under upper ramp pads at upper corner fittings. Replace pads on fittings.

WARNING: SUPPORT DOOR IN DOOR OPENING UNTIL DOOR PIVOT LINK FITTINGS ARE INSTALLED TO PREVENT DOOR FROM FALLING INWARD. DOOR WEIGHS APPROXIMATELY 100 LB.

(5) Place door in door opening so that forward cam follower rests on lower ramp.

NOTE: If requirements of Steps 1D(5) and 1D(6) cannot be satisfied, remove door from opening and perform Steps 1D(7) through 1D(10), as required.

(6) Position door in door opening using wedges and/or blocks for lateral restraint to maintain dimensions A and B equal within 0.020 in. Measure dimensions A and B above upper door stop and below lower door stop at each side of door. Verify gaps between door and fuselage (Ref. Fig. 502).

(7) Remove shims from under side wedges on door surround structure. Replace wedges.

(8) Loosen bolts holding lower ramp at aft side of door surround structure and lower ramp.

(9) Remove shims from under lower track stop bumper. Replace bumper.

NOTE: If Steps 1D(7) through 1D(10) are performed, replace door in door opening in accordance with Steps 1D(5) and 1D(6).

(10) Temporarily attach door pivot link fittings to door tracks with pivots and pivot bolts. Do not install pivot shims.

(11) Determine gap dimensions D and E at each pivot link fitting.

(12) Determine shims required at each fitting by adding 0.050 to 0.056 in. to dimension D and subtracting 0.064 to 0.070 in. from dimension E. Final arrangement of shims must allow 0.004 to 0.010-in. clearance gap at each side of pivot link fitting.

(13) Remove pivots and fittings from tracks.

(14) Remove C-clamps from tracks.

NOTE: Aft track must be supported until pivot link fittings are installed.

(15) Attach upper pivot link fittings to tracks with pivots and pivot shims determined in Step 1D(12).

(16) Attach lower pivot link fittings to tracks with pivots (flat on pivot must face downward on track), pivot bolts, and pivot shims determined in Step 1D(12).

R (17) Apply metal activated sealing and retaining compound to
R antirotation setscrew threads and tighten setscrews in
R tracks below each lower pivot.

(18) Lock-wire each lower pivot bolt to pivot.

NOTE: In Steps 1D(19) and 1D(20) aircraft must be level laterally within ±0.50 degree. Angle is measured by resting bubble protractor across top of pivot link fittings.

(19) Lift forward track by rotating manual drive to attain correct angle at lower pivot link fitting.

NOTE: Manual drive speed wrench assembly or 1/2-inch drive speed wrench may be used to turn manual drive socket.

(20) Measure gap between lower end of forward track and track stop bumper. Record measurement.

(21) Lift aft track manually to attain correct angle at lower pivot link fitting. Support track.

(22) With outboard inner face of track contacting track guide rollers, adjust nut A at all pivot links to fair door with fuselage in accordance with Figure 502.

(23) Adjust door pressure stop bolts to contact stop fittings on door surround structure. Use wire locks retained in Step 1D(3) to lock bolts in place.

NOTE: If wire lock cannot be inserted, back off bolt to next slot.

(24) Back off nut A two turns at each link. Use spring clip retained in Step 1D(2) to lock nuts in place.

CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST BE ALIGNED WITH SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT.

IF MALE END OF SHAFT WILL NOT ENGAGE WITH SOCKET, RAISE FORWARD TRACK MINIMUM ADDITIONAL DISTANCE TO ALLOW ENGAGEMENT.

(25) Connect cross-drive flexible shaft to gearbox. Tighten coupling nut finger-tight and lock-wire nut to structure.

(26) With forward cam follower resting on forward ramp, measure gap between aft cam follower and ramp. Do not remove lateral restraint or move door. Determine distance aft ramp must be moved to attain gap of 0.035 in. or less. Record measurement.

(27) Measure gap at each side wedge and determine shims required to attain 0.050 (±0.010)-in. gap. Record measurements.

(28) Measure gap at each upper ramp pad and determine shims required to attain 0.10 (±0.02)-in. gap. Record measurements.

(29) Remove lateral restraint installed in Step 1D(6).

(30) Remove rigpin from counterbalance.

(31) Remove tags from door controls.

CAUTION: DO NOT PULL MANUAL CONTROL HANDLE PAST FIRST DETENT.

(32) Place inner manual control handle in first detent position.

(33) Using manual drive, raise door to dimension C.

(34) Adjust stop arm setscrew at each pivot link, to attain correct dimensions from contour. Lock setscrew in place with jamnut and lock-wire nut to stop arm.

(35) With door in inboard position, adjust nut B at each pivot link to make door edge parallel to door surround

structure within 0.02 in. over length of door with a dimension F of 0.100 (±0.010) in. at either upper forward or lower aft pivot link and 0.100 in. or greater at other link.

(36) Adjust each nut B to contact pivot link. Use spring clips retained in Step 1D(2) to lock nuts in place.

(37) Install shims at each upper ramp pad as measured and recorded in Step 1D(28).

(38) Open door by placing inner manual control handle in second detent position.

(39) Install or remove shims at each side wedge as measured and recorded in Step 1D(27).

(40) Adjust aft lower ramp as determined and recorded in Step 1D(26).

(41) Install shims under forward lower track stop bumper as measured and recorded in Step 1D(20).

(42) Verify door operation (Ref. 52-22-00).

(43) Close door using manual drive (approximately 250 turns).

2. Adjustment/Test - Pressure Stop Bolt

A. General

This procedure outlines the adjustments necessary to adjust a single pressure stop bolt. The procedure may be used when there is a random pressure stop wear pad with no apparent contact mark from the pressure stop bolt.

B. Equipment and Materials

Shim Stock, 1.0 x 1.0 inch by 0.200 inch thick.

C. Referenced Procedure

52-12-00, Door Actuation System - Adjustment and Test

D. Adjustment

(1) Open door far enough to gain access to pressure stop wear pad above out of adjustment stop bolt.

(2) Tape shim to wear pad of stop to be adjusted, using pressure sensitive (masking) tape.

(3) Tape shim to wear pad above and below stop to be adjusted.

NOTE: Tape must cover shim in area where stop bolt contacts shim.

(4) Lower door to position approximately 6 inches from closed position.

(5) Remove wire lock from bolt to be adjusted. Retain wire lock.

(6) Adjust stop bolt one-half revolution outboard (toward pressure stop).

CR (7) Manually crank door in closing direction until pressure
CR stop bolts are against taped shims.

(8) Open door.

(9) Check tape covering three shims. Mark from stop bolt should be apparent on all stop pads. If mark does not appear on pad at adjusted bolt, repeat Steps 2D(6) through 2D(9). If mark does not appear at pads above and below adjusted bolt, rig door in accordance with Emergency Exit Door Rigging Adjustments, Paragraph 1 of this section.

(10) Install wire lock retained in Step 2D(5) to lock bolt in place.

NOTE: If wire lock cannot be inserted, back off bolt to next slot.

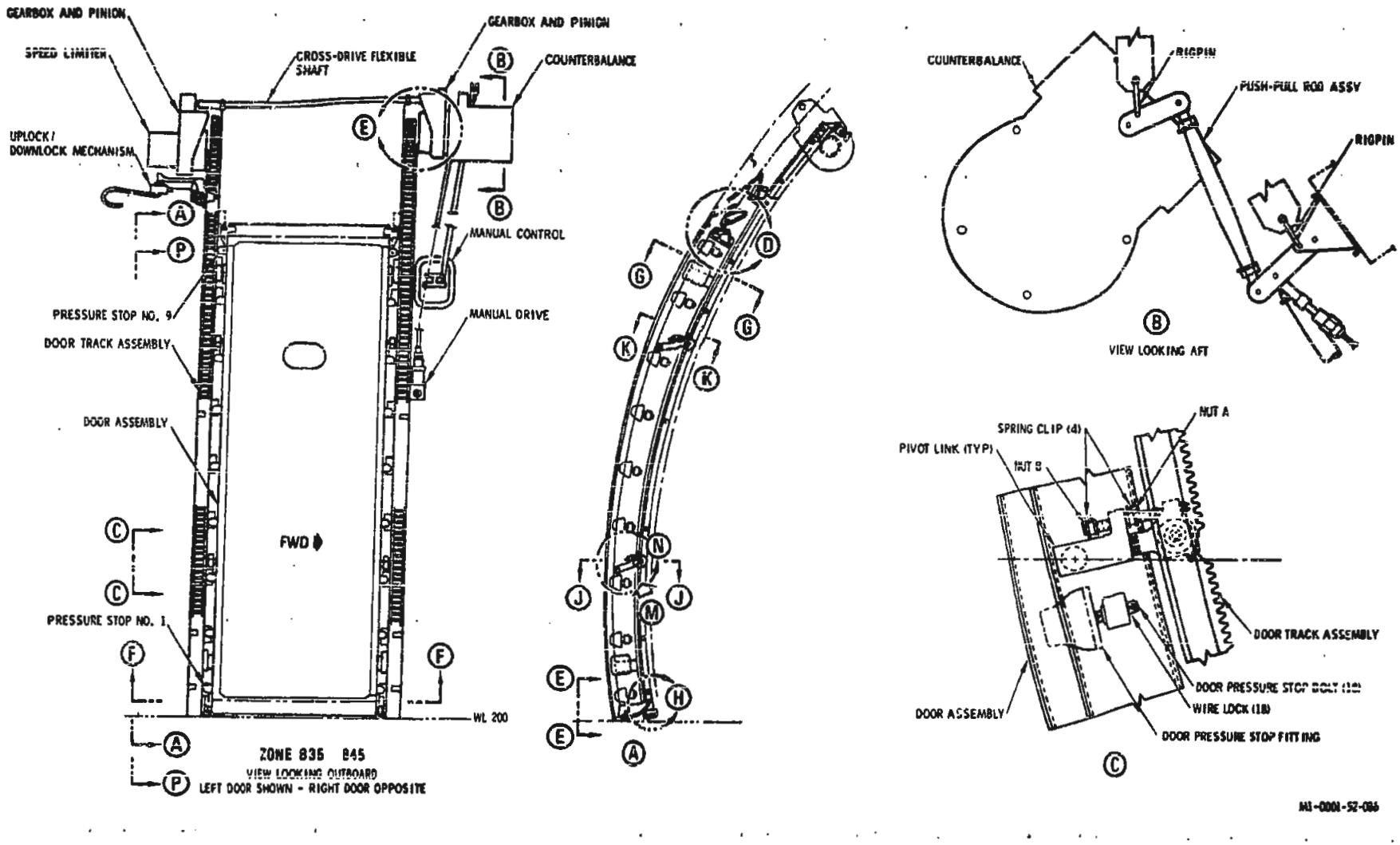
(11) With door open remove tape and shims from pressure stop pads.

(12) Close door.

3. Adjustment/Test - Emergency Exit Shroud Trap Door

A. General

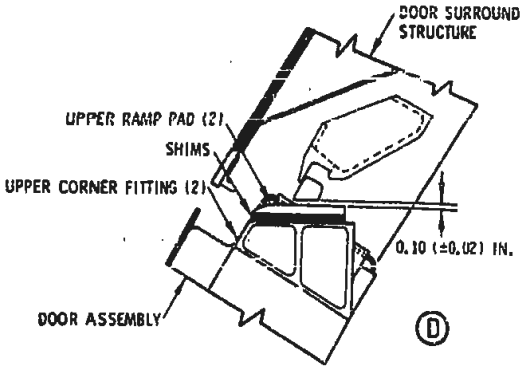
This procedure outlines the rigging adjustments required at each L4 or R4 entry trap door (flipper panel) assembly actuating linkage. Correct adjustment will enable each panel to operate smoothly with its respective emergency exit door. The procedure is applicable to each trap door.



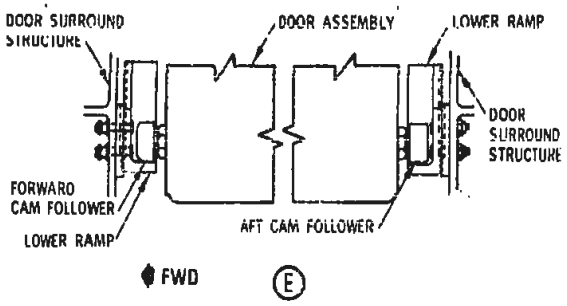
R Emergency Exit Door Rigging Adjustments
R Figure 501 (Sheet 1)

EFFECTIVITY: ALL

001B

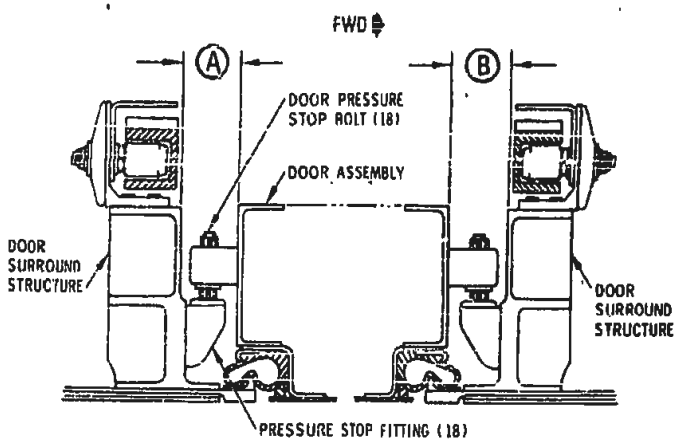


D

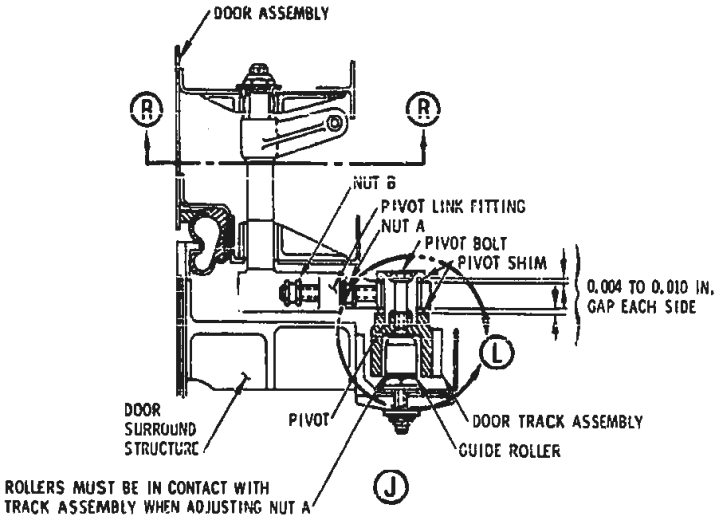


E

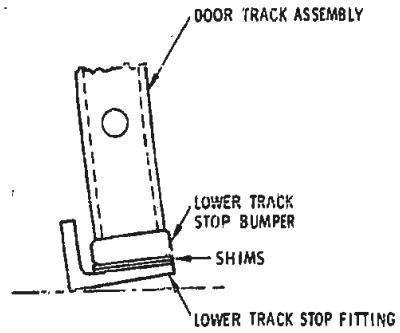
VIEW LOOKING INBOARD



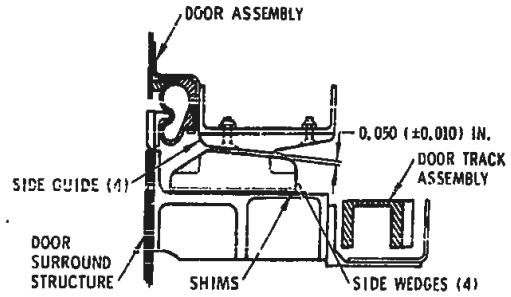
F



J



H



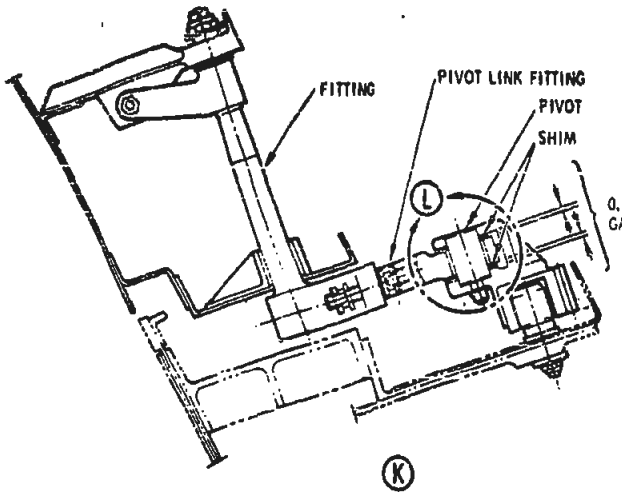
G

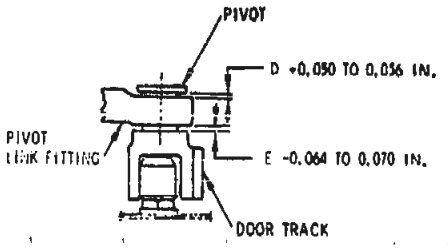
G 1900
MI-0100-52-087

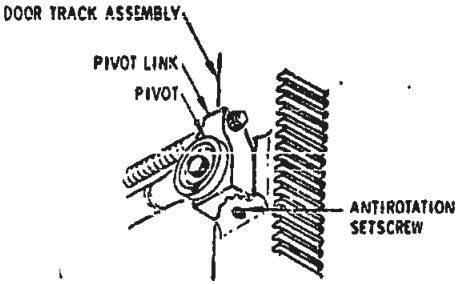
R Emergency Exit Door Rigging Adjustments
R Figure 501 (Sheet 2)

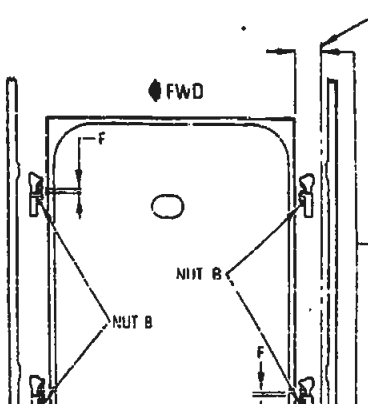
R EFFECTIVITY: ALL

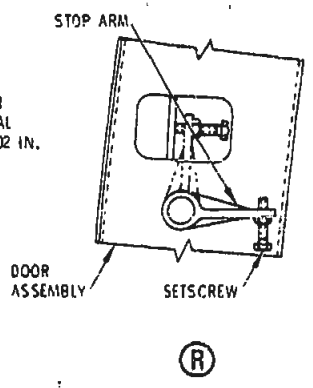
R
050

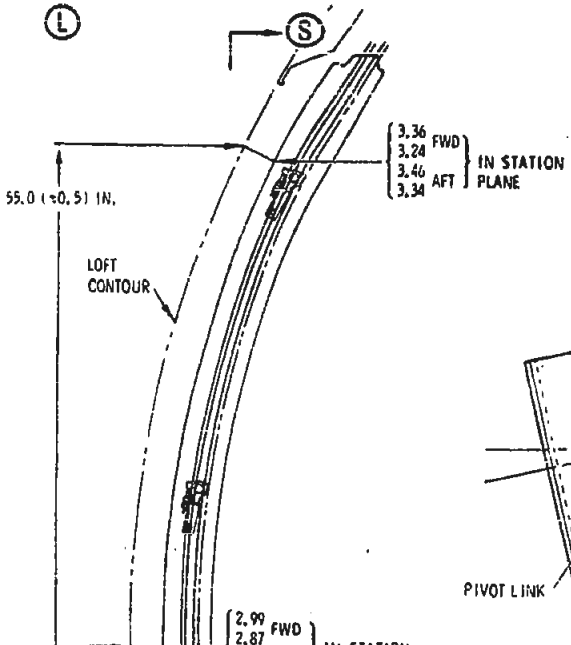


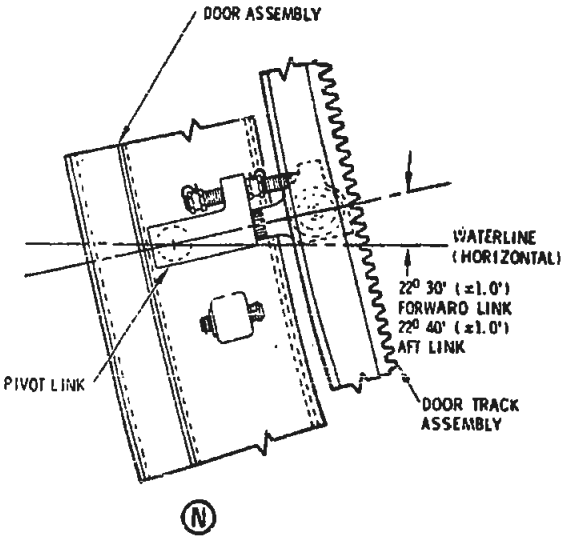










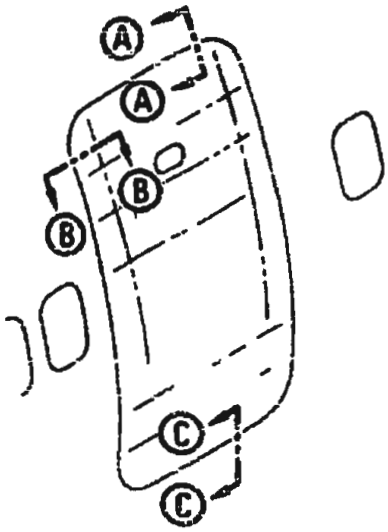


M1-0002-52-088

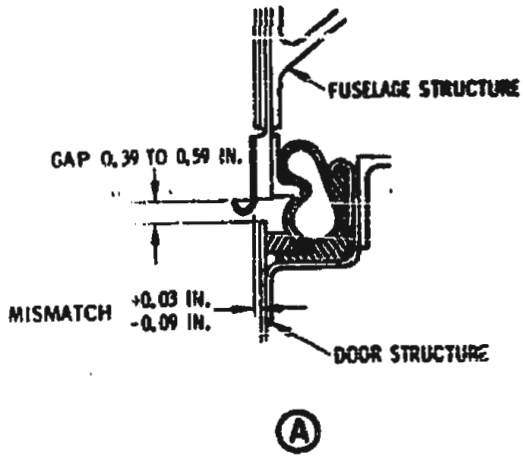
R Emergency Exit Door Rigging Adjustments
R Figure 501 (Sheet 3)

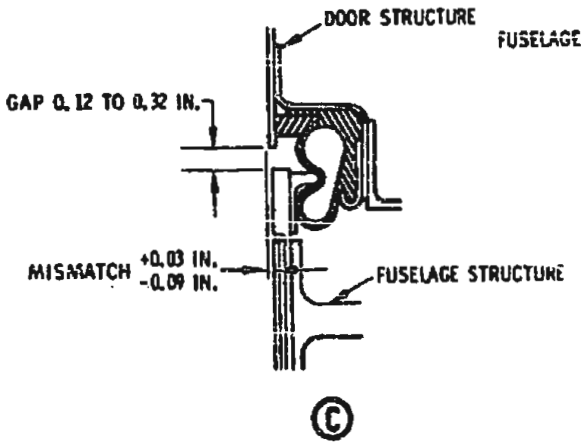
EFFECTIVITY: ALL

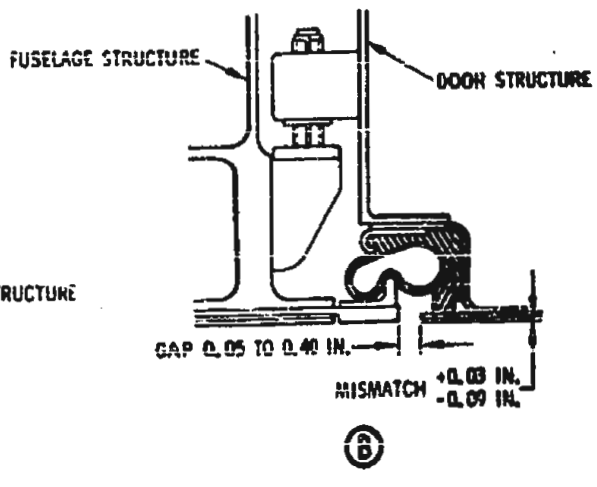
001B



(SMOOTHNESS AND GAPS
TYPICAL ALL PASSENGER DOORS)







MI-0100-52-000

Emergency Exit Door Smoothness and Gaps
Figure 502

B. Referenced Procedures

25-26-01, Ceiling Trim Drop Panels - Removal and Installation

25-26-08, Passenger Entry Shroud and Trim - Removal and Installation

52-22-00, Door Actuation System - Adjustment and Test

C. Trap Door Rigging Adjustments

(1) Verify that the following has been performed:

(a) Emergency exit door is in closed position (Ref. 52-22-00).

(b) Entry overhead shroud is installed (Ref. 25-26-08).

(c) Trap door brackets are installed on emergency exit door tracks.

(d) Ceiling panels inboard of entry, below path of exit door travel, are removed (Ref. 25-26-01).

(e) Exit door controls are tagged.

(2) Center trap door over opening in shroud.

(3) Adjust shims under door guide roller so that trap door rests flat on shroud and roller contacts trap door cam (Ref. Fig. 503).

NOTE: Shim stock or washers may be used to adjust height of guide roller.

(4) Loosen bolts holding sections of trap door bracket together (each end of door).

(5) Adjust serrated surfaces of bracket sections inboard/outboard and vertically to align slot in inboard section of bracket with hole in each angle bracket.

NOTE: Attachment pin may be used as rigpin to align holes.

CAUTION: VERIFY ENGAGEMENT OF SERRATED SURFACES BEFORE TIGHTENING BOLTS.

(6) Tighten bolts holding serrated surfaces in place (each end of door).

(7) Attach trap door bracket to trap door (each end of door) using pin and new cotter pin.

(8) Install springs. If spring tension lifts inboard edge of trap door more than 0.12 inch, readjust inboard/outboard serrated surfaces inboard to force inboard edge down.

(9) Remove tag from emergency exit door controls.

(10) Manually open emergency exit door (Ref. 52-22-00) until trap door is free of shroud, and door guide roller is clear of trap door cam.

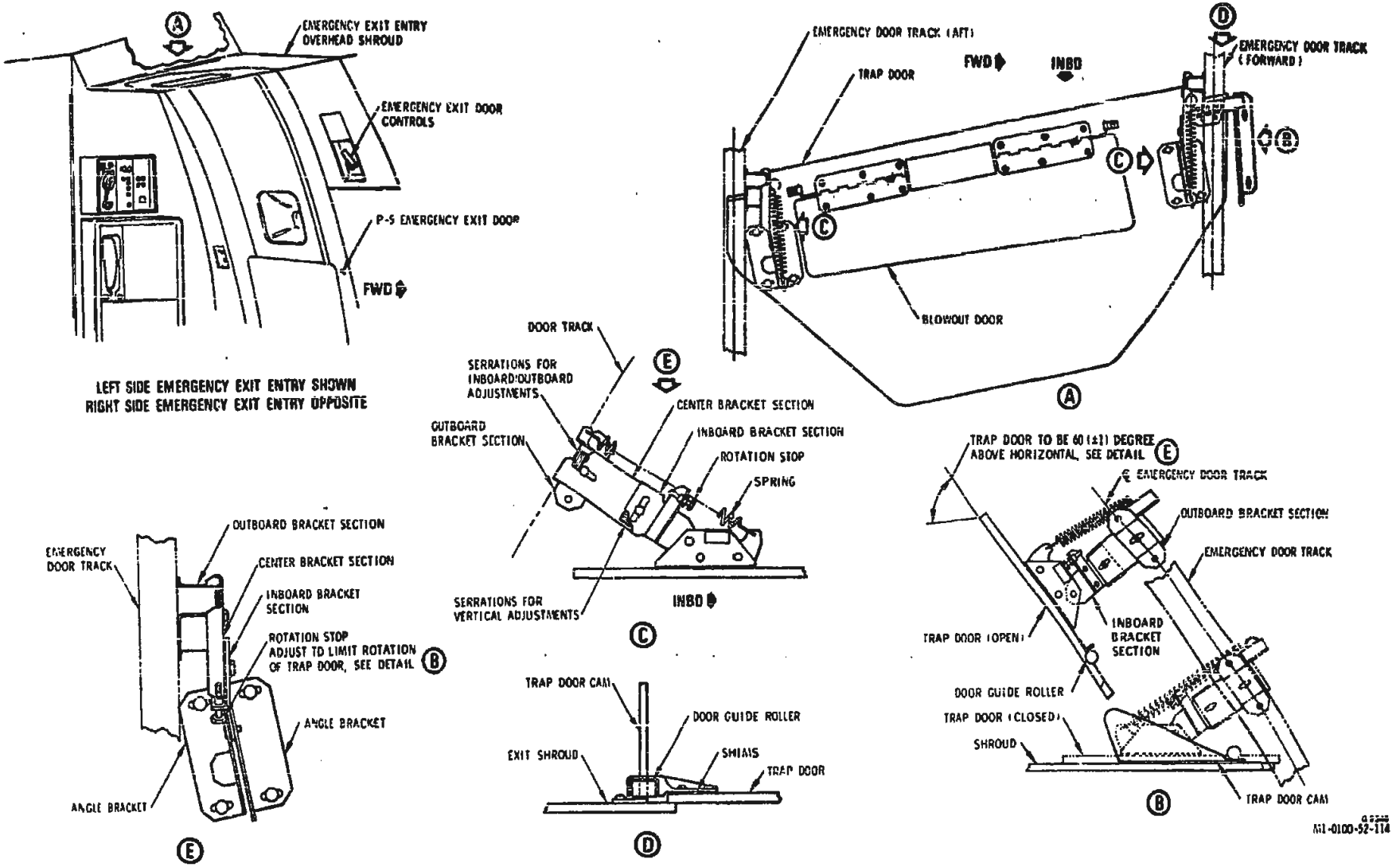
(11) Adjust trap door rotation stops.

(12) Manually open emergency exit door. Verify that trap door clears all objects by 1.00 (+0.00, -0.62) inch through entire travel of emergency exit door.

NOTE: Both emergency exit doors must be checked at same time.

(13) Operate emergency exit door in emergency mode to verify operation of trap door.

(14) Install ceiling trim panels (Ref. 25-26-01).



R R Trap Door (L/R4 Entry) Rigging Adjustments
Figure 503

EFFECTIVITY: ALL

0138

R

EMERGENCY DOOR SEAL - REMOVAL AND INSTALLATION

1. General

This procedure is applicable for the L4 and R4 door seals, zones 835 and 845.

2. Equipment and Materials

R Pry Bar,

NOTE: The tool should have a tapered, wedge-shaped end with blunt edges.

3. Referenced Procedure

52-22-00 Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) If door is installed in aircraft, open door enough to gain access to seal (Ref. 52-22-00).

NOTE: To facilitate seal replacement, door may be removed.

(2) Tag door controls.

(3) Insert pry bar between band seal retainer and door skin at bottom of door (Ref. Fig. 401).

(4) Pry out band seal retainer and remove from door.

(5) Disengage seal from seal retainer and remove from door.

B. Installation

(1) Verify that door controls are tagged.

(2) Check that door seal, band seal retainer, and seal retainer are clean and free of grease.

(3) Place door seal on door with word TOP at top of door facing outboard.

(4) Insert edge A of seal into seal retainer.

(5) Insert remainder of seal into seal retainer without stretching or twisting seal.

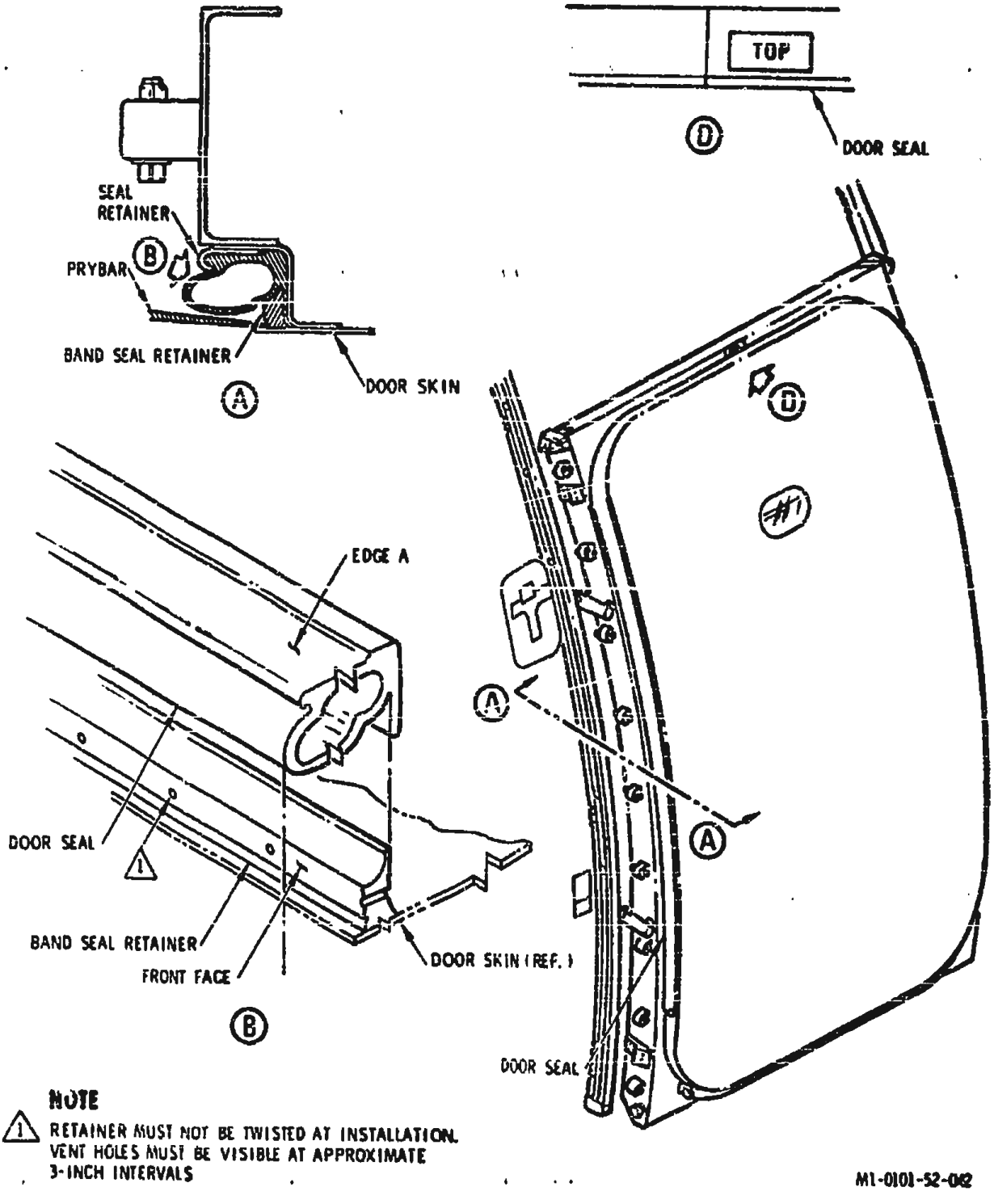
NOTE: As seal is inserted at top of door and down sides, door may be raised to allow better access to seal toward bottom of door.

(6) Install band seal with words LOCATE SPLICE ON BOTTOM OF DOOR at bottom of door. Do not twist band seal retainer. When the seal and rubber retainer are properly installed the retainer vent holes may be seen by viewing between outboard surface of seal and inboard surface of door skin.

R
R
R
R

NOTE: Band seal retainer must have slight preload stretch equally around periphery.

(7) Remove tags from door controls.



NOTE

1. RETAINER MUST NOT BE TWISTED AT INSTALLATION. VENT HOLES MUST BE VISIBLE AT APPROXIMATE 3-INCH INTERVALS

M1-0101-52-002

R
R

Door Seal - Removal and Installation
Figure 401

EFFECTIVITY: ALL

0138

EMERGENCY EXIT DOOR ACTUATION SYSTEM - DESCRIPTION AND OPERATION

1. General

The emergency exit door has two modes of operation, emergency and manual. In the emergency mode, the door can be opened from either inside or outside the aircraft. In the manual mode, the door can be opened and closed only from inside the aircraft.

The emergency exit door actuation system consists of mechanical components (Ref. Fig. 1).

2. Counterbalance

A. Description

The counterbalance assembly consists of a stack of Belleville springs mounted between movable supports which drive a free-rotating ball screw shaft. The counterbalance contains a clutch and brake. The clutch is used to disengage the drive mechanism to enable the counterbalance to open the door. The brake is used to hold the door at any selected intermediate position. The brake also has an input drive provision which incorporates a no-back mechanism to permit hand-cranking the door to the open or closed position.

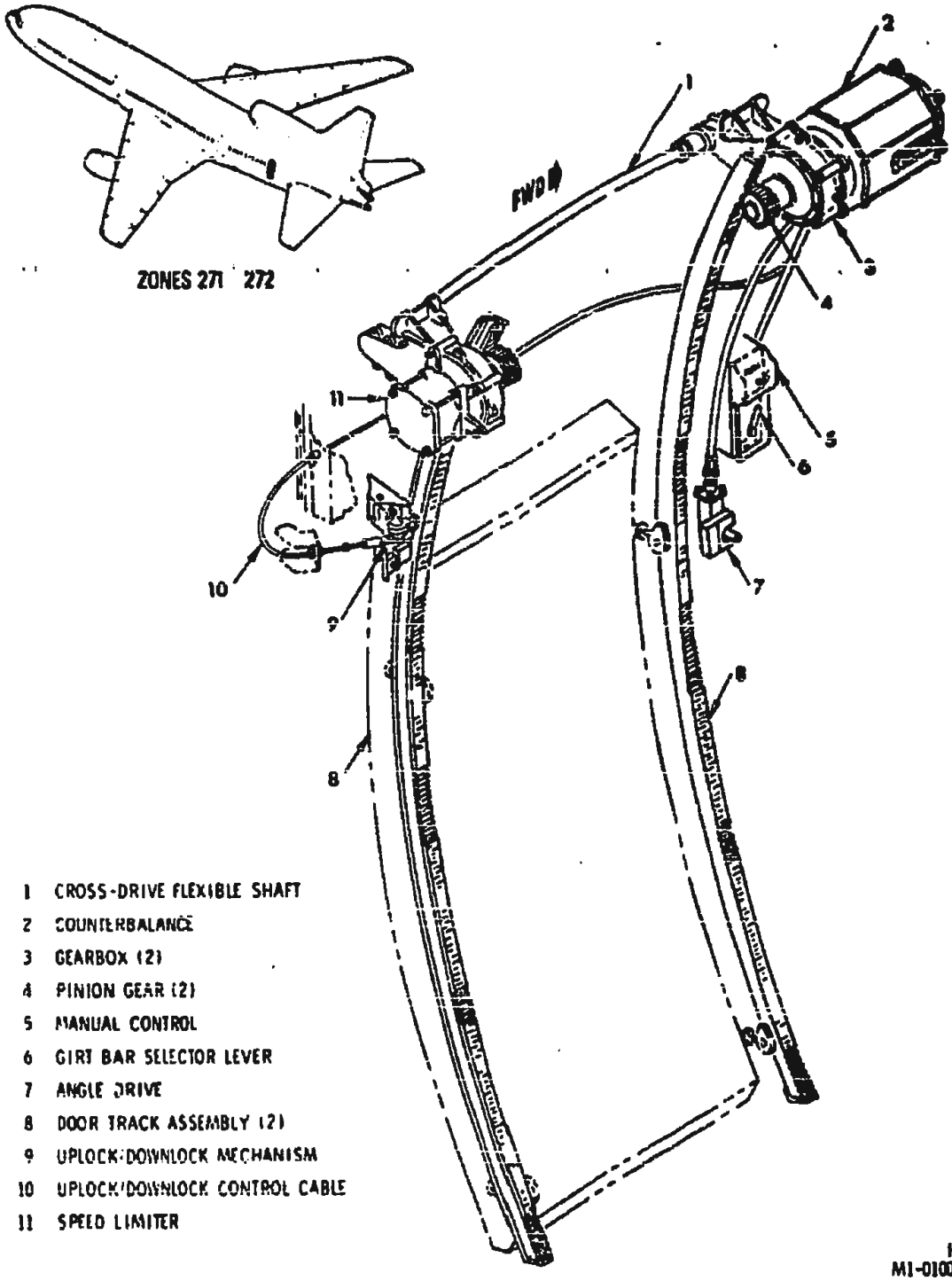
The counterbalance assembly stores mechanical energy as the door moves to the closed position, which causes the counterbalance springs to compress to an approximate potential torque of 516 pound-inches which is available for door-open operation.

3. Speed Limiter

A. Description

The door speed limiter contains a flywheel with flyweights and springs. The speed limiter is closed at one end by a plate and at the opposite end by a mounting housing which contains a planetary gear set engaging the flywheel assembly through a sun gear shaft. Input rotation is received on the internal spline of the planetary gear set.

R The speed limiter prevents the emergency doors from exceeding 2 feet per second during door-open operation when the door is powered by the counterbalance assembly.



1 CROSS-DRIVE FLEXIBLE SHAFT
2 COUNTERBALANCE
3 GEARBOX (2)
4 PINION GEAR (2)
5 MANUAL CONTROL
6 GIRT BAR SELECTOR LEVER
7 ANGLE DRIVE
8 DOOR TRACK ASSEMBLY (2)
9 UPLOCK/DOWNLOCK MECHANISM
10 UPLOCK/DOWNLOCK CONTROL CABLE
11 SPEED LIMITER

HH 9302
M1-0100-52-051

R
RR

Emergency Door Actuation System
Figure 1

EFFECTIVITY: ALL

0508

4. Manual Two-way Angle Drive

A. Description

One manual two-way angle drive is located forward of each emergency exit door position in zones 271 and 272. As applied at these positions, the angle drive (Ref. 52-12-00) transmits torque through a flex drive shaft to an input drive on the counterbalance assembly.

5. Door Handle Mechanism

A. Description

The door handle assembly is forward of the door at WL 265. The mechanism can be operated from either inside or outside the aircraft.

R The assembly is comprised of an inside PULL and outside PULL
R DOWN handle, an upper and a lower cover for the outside handle, a PUSH latch to release the outside handle, and linkage to unlock the door and declutch the counterbalance.

R The outside PULL DOWN (tee) handle is released by depressing the PUSH latch. As the handle is pulled down there are three detent positions. The first position disengages the girt bar, the second position withdraws the lockpin, and the third position declutches the counterbalance.

R The inside tee handle is covered by a transparent cover that must be removed to gain access to the handle. The handle has two detent positions. The first position withdraws the lock pin and the second position declutches the counterbalance.

6. Cross-drive Gearbox

A. Description

Two cross-drive gearboxes are required for each emergency exit door. The gearboxes, located at zone 271, are attached to fuselage structure above the doors with their drive ends facing each other from positions fore and aft of each door.

The gearbox assembly comprises a multistage spur gear train and two idler gears in a housing with an input and output shaft. The input drive end of each door set of gearboxes accepts the input drive shaft of the counterbalance on one gearbox and the input drive of the speed limiter on the second gearbox.

The two gearboxes are interconnected with a flexible cross-drive shaft to synchronize the doors and to transmit power from the counterbalance-carrying gearbox to the speed-limiter-supporting gearbox.

7. Operation

A. Emergency Mode

In an emergency, the emergency exit door may be opened from either inside or outside the aircraft by operating either
R the inside or outside PULL DOWN (tee) handle.

R If the door is opened by operating the inside tee handle, the position of the evacuation slide selector lever determines whether or not the slide will be deployed.

R WARNING: OPERATION OF INSIDE PULL DOWN HANDLE TO SECOND DETENT POSITION WILL DEPLOY EVACUATION SLIDE IF EVACUATION SLIDE SELECTOR LEVER IS IN ENGAGE POSITION.

The evacuation slide will not deploy if the evacuation slide selector lever is in the DETACH position prior to pulling
R inside PULL DOWN handle.

R If the door is opened by operating the outside PULL DOWN handle, the evacuation slide will not be deployed as linkage from the handle assembly moves the evacuation slide selector lever to the DETACH position.

When fully open, the door may be locked open by pushing both
R the inside and outside PULL DOWN handles to the stowed position.

B. Close Door

The emergency exit door is manually actuated closed from inside the aircraft using a speed wrench in the manual angle drive.

R To close the door, the inside PULL DOWN (tee) handle must be placed at the first detent position to withdraw the lockpin. The evacuation slide selector lever must be in the ENGAGE position during door closing so that the girt bar can engage the floor fittings as the door closes. The door can then be closed using a speed wrench in the manual angle drive.

R NOTE: If the door is inadvertently closed with the
R evacuation slide selector lever in the DETACH
R position, the door must be raised slightly and the

R emergency slide girt bar retainer fittings inspected
R for damage prior to closing the door with the slide
R selector lever in the ENGAGE position.

C. Manual Mode - Open Door

The emergency exit door can be opened manually from inside the aircraft using a speed wrench in the manual angle drive.

To open the door manually, the evacuation slide selector lever must be placed in the DETACH position and the inside PULL handle placed at the first detent position. The door can then be opened using a speed wrench in the manual angle drive.

CAUTION: EVACUATION SLIDE SELECTOR LEVER MUST BE IN DETACH POSITION PRIOR TO OPENING DOOR.

WARNING: EVACUATION SLIDE WILL DEPLOY WHEN DOOR IS OPENED IF EVACUATION SLIDE SELECTOR LEVER IS IN ENGAGE POSITION.

EMERGENCY EXIT DOOR ACTUATION SYSTEM - ADJUSTMENT AND TEST

1. General

This procedure specifies the steps to be performed to verify operation of an emergency exit door. The procedure is the same for each door.

The door must operate smoothly (no binding) during each test.

2. Referenced Procedures

24-41-00	External Power/Ground Service System - Maintenance Practices
25-61-06	Girt Bar Arming System - Adjustment and Test
25-61-10	Emergency Escape Slide/Raft assembly - Removal and Installation
52-22-01	Counterbalance - Removal and Installation

3. Adjustment/Test

A. Preparation for Operational Test

(1) Turn on electrical power (Ref. 24-41-00).

(2) On pilots overhead circuit breaker panel CB1, zone 210, verify that circuit breakers LANDING GEAR - PROX SW PWR - NO. 1 and LANDING GEAR - PROX SW PWR - NO. 4 are closed.

On Flight Engineer/Second Officers overhead circuit breaker panel CB2, zone 215, verify that circuit breaker MLG - GND - SENSE is closed.

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, verify that circuit breakers PROXIMITY SWITCH - 2, PROXIMITY SWITCH - 3, and DOOR - WARN - LTS are closed.

CR B. Operational Test - Emergency Mode

CR NOTE: Evacuation Slide/Slide Raft must be installed on door
CR for this test.

CR A stop watch or other timing device is required in
CR the performance of this test.

CR WARNING: IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN
CR DEPLOYMENT OF EVACUATION SLIDE.

CR (1) Actuate girt bar selector lever several times between
CR ENGAGE and DETACH and check that latches at girt bar
CR floor fittings are in up position with lever in ENGAGE
CR and are in down position with lever in DETACH.

CR (2) With door closed, place evacuation slide girt bar
CR selector lever in DETACH position.

CR (3) Verify that applicable door warning light on Flight
CR Engineer annunciator panel is operative and out.

CR (4) Remove plastic cover from emergency PULL DOWN T-handle.
CR Save cover for later reinstallation.

CR WARNING: DO NOT PULL EMERGENCY PULL DOWN T-HANDLE WITH
CR EVACUATION SLIDE SELECTOR LEVER IN ENGAGE
CR POSITION.

CR (5) Slowly pull inside emergency T-handle to its first
CR detent position and release T-handle. Do not pull
CR handle past first detent to full down position, which
CR will cause door to open.

CR (a) Verify that applicable door warning light on
CR Flight Engineer annunciator panel is on.

CR (b) Verify that lock pin is withdrawn from door track
CR and that door does not move. (This confirms
CR operation of the counterbalance brake).

CR CAUTION: WHEN USING EMERGENCY HANDLE TO OPEN DOOR, ALLOW
CR DOOR TO GO FULL OPEN. RE-STOWING HANDLE AND
CR STOPPING DOOR AT INTERMEDIATE POSITION CAN CAUSE
CR PREMATURE FAILURE OF DOOR COUNTERBALANCE.

CR (6) With a stop watch or other timing device, prepare to
CR time door opening to full open position against
CR overhead bumpers.

CR CAUTION: SELECTOR LEVER MUST BE IN DETACH POSITION
CR BEFORE PULLING T-HANDLE.

CR Pull inside T-handle to its second detent (full down
CR position) and release handle.

CR (a) Verify that door was stopped in full open position
CR by overhead bumpers within the time limits of 2.0
CR to 5.0 seconds.

CR (This confirms operation of the counterbalance and
CR brake release mechanism and the speed limiter).

CR (b) Push T-handle to stowed position and verify that
CR applicable door warning light on annunciator panel
CR remains on.

CR If door did not open within applicable time limits
CR (time too long or too short), the following
CR requirements apply:

CR 1) If aircraft in Check "C" or higher maintenance
CR check, corrections must be made. (Reference
CR 52-22-00, Page 101 etc., Fault Isolation).

CR If door opening time too short (door too fast), in
CR addition to corrections to door actuation system,
CR door overhead bumpers and structure must be
CR checked for possible damage. Damage must be
CR repaired.

CR The Operational Test in Emergency Mode must be
CR repeated, and door must open within applicable
CR time limits prior to further flight.

CR 2) If aircraft not in check "C" or higher maintenance
CR check, corrections should be made. (Reference
CR 52-22-00, Page 101, etc., Fault Isolation). If
CR corrections are not made, the applicable door and
CR evacuation slide must be considered inoperative
CR until corrections have been completed.

CR If door opening time too short (door too fast),
CR prior to further flight, door overhead bumpers and
CR structure must be checked for possible damage.
CR Damage must be repaired.

CR Refer to MEDP for dispatch of aircraft with
CR door/evacuation slide inoperative.

CR NOTE: If aircraft is to be dispatched per MEDP,
CR with door/evacuation slide inoperative,
CR remaining steps in this Operation Test may
CR be omitted.

CR If door has opened within applicable time limits,
CR continue with the further steps of this test.

CR (7) Pull inside emergency T-handle to first detent to withdraw lockpin and manually crank door down approximately six to eight inches.

CR (8) Push inside T-handle up fully to its stowed position and move girt bar selector lever to ENGAGE position.

CR (9) Release outside emergency T-handle and pull outside handle to its first detent position and release T-handle.

CR (a) Verify that girt bar selector lever has moved from ENGAGE position to DETACH position.

CR NOTE: Operation of outside T-handle past its first detent to its second and third detents moves inside handle and at its third detent, allows door to move up.

CR (10) Pull outside T-handle down through its second detent to its third detent (full down position) and release handle.

CR (a) Verify that inside T-handle is in its full down position.

CR (b) Verify that door is in full open position against overhead bumpers.

CR (11) Push outside T-handle up and latch it in stowed position

CR (12) Push inside T-handle up to its first detent (lock pin still retracted).

CR (13) Position girt bar selector lever to ENGAGE and manually crank door closed.

CR (a) Push inside T-handle to its stowed position and install plastic cover over handle.

CR (b) Verify girt bar is securely latched in forward and aft floor fittings.

CR (14) Reposition girt bar selector lever to DETACH.

CR (15) Verify that applicable door warning light on Flight Engineer annunciator panel is operative and out.

CR C. DELETED

D. Operational Test - Manual Closure From Inside Aircraft

(1) Verify that evacuation slide selector lever is in ENGAGE position.

(2) Remove plastic cover from inside emergency PULL DOWN (tee) handle.

(3) With door open and door warning light on, pull tee handle to first detent.

(4) Gain access to manual angle drive socket under trim cover at forward side of door. Insert manual drive speed wrench assembly (or 1/2-inch drive speed wrench) in socket, and crank door toward the closed position (approximately 250 turns). Stow tee handle after cranking door 1/3 toward closed position, then continue
R cranking until door is closed.

NOTE: If door holds in closed position when drive handle is removed from socket, counterbalance clutch holding capability is confirmed.

If manual drive socket rotates when crank is removed (up to one revolution in opening direction) check lock pin for freedom of motion. If lock pin contacts roller in track cutout replace counterbalance (Ref. 52-22-01).

R (5) With tee handle in stowed position, verify that door
R warning light is off.

NOTE: If the door is inadvertently closed with the evacuation slide selector lever in the DETACH position, raise the door approximately 18 inches and inspect the girt bar retainer fittings for damage, and verify that breakaway wire is intact (Ref. 25-61-10). Move evacuation slide selector lever to ENGAGE and crank door closed. Repeat Step (5).

(6) Verify that girt bar is engaged in latches at bottom of door.

(7) Reinstall plastic cover over inside emergency handle.

E. Operational Test - Manual Opening from Inside Aircraft

(1) Verify the evacuation slide selector lever is in DETACH position.

WARNING: EVACUATION SLIDE WILL DEPLOY WHEN DOOR OPENS IF EVACUATION SLIDE SELECTOR IS IN ENGAGE POSITION.

(2) Remove plastic cover from inside PULL DOWN (tee) handle and place the handle at first detent position. Verify that applicable door warning light on Flight Engineer/Second Officers annunciator panel comes on.

(3) Gain access to manual angle drive socket under trim cover at forward side of door. Insert manual drive speed wrench assembly (or 1/2-inch drive speed wrench) in socket, and crank door to open position (approximately 250 turns).

(4) Push inside PULL DOWN handle to stowed position to lock door open.

(5) Close emergency door (Ref. Para. 3D).

R EMERGENCY DOOR COUNTERBALANCE - REMOVAL AND INSTALLATION

1. General

A counterbalance assembly is located above and forward of each L4 or R4 door, zone 270. This removal and installation procedure is applicable to the counterbalance assembly at each location.

2. Equipment and Materials

Rigpin, PN B994, or equivalent

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Protective caps

3. Referenced Procedures

12-22-40	Doors Lubrication
25-26-01	Ceiling Trim Drop Panel - Removal and Installation
25-61-01	Emergency Escape Slide Assembly - Removal and Installation
25-61-10	Emergency Escape Slide/Raft Assembly - Removal and Installation
52-22-00	Emergency Exit Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Pull inside emergency handle to first detent. Using handcrank, manually open door approximately three inches (Ref. 52-22-00).

(a) If door is immovable as a result of an inoperative counterbalance, support door to relieve load on counterbalance to facilitate removal of counterbalance attachment bolts.

(2) Remove emergency slide container (Ref. 25-61-01).

(a) If door is immovable and emergency slide removal not feasible, support door, allowing for additional weight of slide.

(3) If door is movable, pull emergency handle to open door. Stow emergency handle and check that lock pin extends through slot in door aft track.

(4) Tag door controls.

(5) Gain access to counterbalance by lowering ceiling panel inboard of door (Ref. 25-26-01).

(6) With inner emergency handle in stowed position, install rig pin through brake cam yoke into counterbalance and safety (Ref. Fig. 401).

R NOTE: With rig pin properly installed through brake
R cam yoke into counterbalance and safetied, the
R counterbalance is locked and may be safety
R removed. No additional locking steps should be
R necessary when removing a damaged emergency door
R counterbalance.

(7) Disconnect manual drive flexible shaft at manual input of counterbalance.

CAUTION: THE FOLLOWING STEP IS REQUIRED IF DOOR IS MOVABLE AND IS NOT BEING SUPPORTED BY OTHER MEANS.

(8) To provide door support during counterbalance removal, if door is movable, proceed as follows:

(a) Using 1/4-inch drive wrench in counterbalance manual input socket, turn clockwise until lockpin just contacts upper end of slot in door aft track.

(9) Remove rod end from brake cam yoke.

(10) Reinstall bushings, washers, bolt, and nut in rod end for re-use after installing counterbalance.

WARNING: DOOR MUST BE SUPPORTED BY LOCKPIN OR OTHER PHYSICAL MEANS TO PREVENT IT FROM FALLING TO CLOSED POSITION WHEN COUNTERBALANCE IS REMOVED. DOOR WEIGHS APPROXIMATELY 100 POUNDS, SLIDE WEIGHS APPROXIMATELY 100 POUNDS. COUNTERBALANCE IS AN ENERGY-STORING DEVICE. HANDLE WITH CARE. COUNTERBALANCE WEIGHS APPROXIMATELY 40 POUNDS.

(11) Remove counterbalance from gearbox. Install protective caps on shaft and input fittings.

NOTE: If counterbalance installation bolts cannot be easily removed it may be necessary to either raise or lower door slightly to remove load on bolts.

If gearbox spline is removed with counterbalance, remove spline from counterbalance and reinstall in gearbox.

R WARNING: THE COUNTERBALANCE IS AN ENERGY STORING DEVICE.
R REMOVING PRELOAD WILL SOMEWHAT REDUCE THE HAZARD
R OF HANDLING A REMOVED COUNTERBALANCE. SIGNIFICANT
R DANGER STILL EXISTS IF COUNTERBALANCE IS
R MISHANDLED.

(12) Using 1/4-inch drive wrench in manual input socket, torque socket counterclockwise to remove all load from counterbalance springs.

(13) If door is not in full open position, proceed as follows:

(a) With slide not installed, raise door to full open position and verify that lock pin extends through slot in door aft track.

(b) With slide installed, door may be raised with slide installed, or lowered to remove slide assembly. In either case, door must be raised and locked as in Step (a). Provide supplemental support under door.

B. Installation

(1) Verify that:

(a) Door controls are tagged.

(b) Door is in open position with lock pin extended through slot in door aft track.

(c) Rig pin is installed in counterbalance and safetied.

(d) Gearbox spline is lubricated (Ref. 12-22-40) and installed in gearbox.

(e) Mounting surfaces and spline teeth are clean.

(2) Turn manual input socket counterclockwise until output shaft stops rotating.

(3) Adjust initial load on counterbalance by rotating manual input shaft clockwise as follows:

CR	COUNTERBALANCE PART NUMBER		PREWIND TURNS
CR	LOCKHEED	VENDOR	
CR	671827-107	1313T100-5	45
CR	671827-109	1313T100-7	45
CR	671827-113	1313T100-9	15
CR	671827-115	1313T100-11	15
CR	671827-117	1313T100-13	15

(4) Install counterbalance so that mounting holes align as closely as possible with mating holes in forward gearbox.

(5) Torque manual input shaft in a direction to align holes to complete final alignment of mounting holes. If more than one revolution of the shaft is required to align holes, reindex counterbalance.

(6) Remove bushings, washers, bolt, and nut, retained in Step 4A(10), from rod end.

(7) Loosen jam nuts at each end of upper push rod.

(8) With inner emergency handle in stowed position, rotate push rod barrel to align rod end with hole in brake cam yoke.

(9) Install bushings, washers, bolt, and nut through yoke and rod end.

(10) Tighten jam nuts at each end of push rod and safety with lock-wire.

CAUTION: MALE END OF MANUAL DRIVE FLEXIBLE SHAFT MUST LINE UP WITH FEMALE SOCKET ON COUNTERBALANCE. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT. TURN MANUAL ANGLE DRIVE TO ALIGN SHAFT WITH SOCKET.

(11) Remove protective caps, and connect manual drive flexible shaft to manual input socket. Tighten coupling finger-tight and safety with lock-wire.

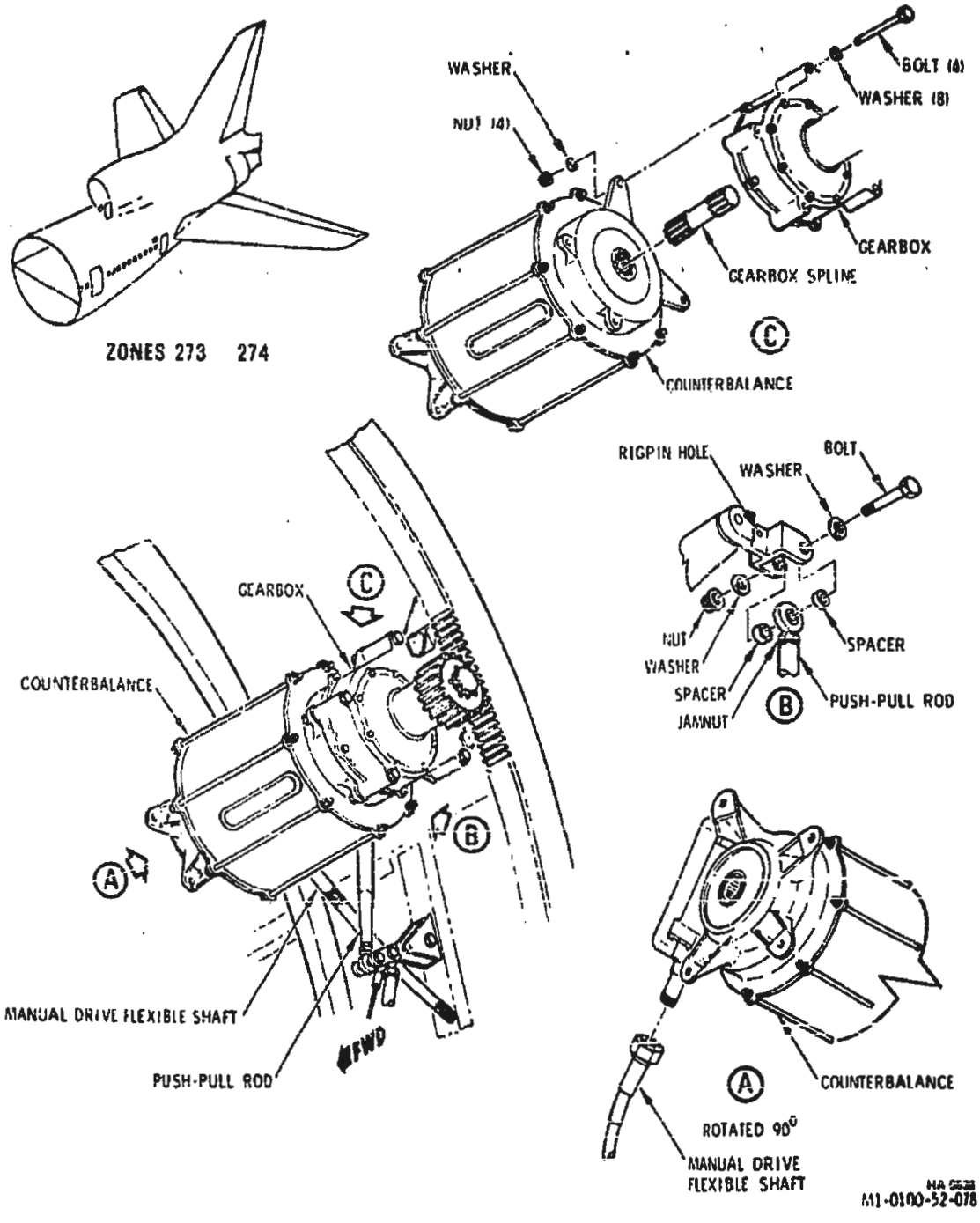
(12) Remove rig pin from counterbalance.

(13) Remove tags from door controls.

(14) Replace emergency escape slide container (Ref. 25-61-01).

(15) Replace ceiling panel (Ref. 25-26-01).

(16) Verify door operation (Ref. 52-22-00).



Counterbalance - Removal and Installation
Figure 401

R EMERGENCY DOOR SPEED LIMITER - REMOVAL AND INSTALLATION

1. General

The speed limiters are located above and aft of each L4 or R4 door, zone 270. The removal and installation procedures for the two speed limiters are the same.

NOTE: If failure of an emergency door speed limiter resulted in rapid undamped opening of an emergency door, the up-stop bumpers and adjacent structure should be checked for damage.

2. Equipment and Materials

Rigpin, PN B994, or equivalent

3. Referenced Procedures

12-22-40	Doors Lubrication
20-51-04	Environmental Sealing of Model L-1011 Airplane - Maintenance Practices
25-26-01	Ceiling Trim Drop Panel - Removal and Installation
52-22-00	Emergency Exit Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Open door.

(2) Tag door controls.

(3) Lower ceiling panel inboard of door (Ref. 25-26-01).

(4) With inner emergency PULL DOWN handle in stowed position, install rigpin through brake cam yoke into counterbalance.

(5) Support speed limiter while removing mounting bolts, washers, and nuts.

(6) Remove speed limiter from gearbox.

NOTE: If gearbox spline is removed with speed limiter, remove spline from speed limiter and reinstall in gearbox.

B. Installation

(1) Verify that:

(a) Door controls are tagged.

(b) Rigpin is installed in counterbalance.

(c) Gearbox spline is lubricated (Ref. 12-22-40) and installed in gearbox.

(d) Mounting surfaces and spline teeth are clean.

(2) Install speed limiter so that mounting holes align with mating holes in aft gearbox.

(3) Wet-install mounting bolts (Ref. 20-51-04).

(4) Remove rigpin from counterbalance.

(5) Remove tags from door controls.

(6) Verify door operation (Ref. 52-22-00).

(7) Replace ceiling panel (Ref. 25-26-01).

R EMERGENCY DOOR CROSS-DRIVE GEARBOX - REMOVAL AND INSTALLATION

1. General

Cross-drive gearboxes are located at the forward side and aft side above each L4 or R4 door, zone 270. The removal procedure is the same for each of the four gearboxes. The installation procedure for the forward gearboxes differs from the procedure for the aft gearboxes as specified in Paragraphs 4B and 4C.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Protective caps

C Gear puller, PN GEN 3154

3. Referenced Procedures

20-51-04	Environmental Sealing of Model L-1011 Airplane - Maintenance Practices
25-26-08	Passenger Entry Shroud and Trim - Removal and Installation
25-61-04	Double Slide Door-mounted Container - Removal and Installation
52-22-00	Emergency Exit Door Actuation System - Adjustment and Test
52-22-01	Counterbalance - Removal and Installation
52-22-02	Speed Limiter - Removal and Installation
52-24-01	Door Lining - Removal and Installation

4. Removal/Installation

A. Removal

(1) Remove doorway trim (Ref. 25-26-08).

(2) Open door approximately 3 inches (Ref. 52-22-00).

(3) Remove emergency slide container (Ref. 25-61-04).

(4) Remove door lining (Ref. 52-24-01).

(5) If forward gearbox is to be removed, remove counterbalance (Ref. 52-22-01) and lower door to closed position.

If aft gearbox is to be removed, remove speed limiter (Ref. 52-22-02).

(6) Tag door controls.

(7) Secure both door tracks against door track guides using C-clamps at No. 1 and No. 7 guides.

(8) Remove gearbox spline.

(9) Disconnect cross-drive flexible shaft from gearbox. Install protective caps on shaft and gearbox couplings.

(10) Bend down lockwasher tabs at pinion retaining bolt.

(11) Remove pinion retaining bolt, washer, and track guide plate.

(12) Use gear puller to remove pinion gear. Install protective cap on pinion gear spline.

(13) Support gearbox and remove mounting bolts and washers.

(14) Move gearbox away from door track until cam followers on gearbox clear track. Remove gearbox.

B. Installation of Forward Gearbox

(1) Verify that door controls are tagged.

(2) Verify that all protective caps are removed and gearbox mounting surfaces are clean.

(3) Install gearbox so that cam followers fit inside door track.

(4) Apply sealing compound under head and on shank of mounting bolts.

R (5) Wet-install mounting bolts (Ref. 20-51-04).

(6) Install pinion gear, track guide plate, new lockwasher, and pinion retaining bolt.

(7) Torque bolt to 200 to 300 lb in.

(8) Bend up at least two lockwasher tabs next to flat sides of bolt head.

R CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST LINE UP WITH FEMALE SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT. IF MALE END OF SHAFT WILL NOT ENGAGE WITH SOCKET, REMOVE C-CLAMPS FROM AFT TRACK AND RAISE AFT TRACK MINIMUM DISTANCE TO ALLOW ENGAGEMENT.

(9) Connect cross-drive flexible shaft to gearbox. Tighten coupling nut finger-tight and lock-wire nut.

(10) Remove C-clamps.

(11) Remove tags from door controls.

R WARNING: SUPPORT DOOR IN OPEN POSITION UNTIL COUNTERBALANCE IS INSTALLED.

(12) Raise door until contact is made with upper bumpers.

(13) Install counterbalance (Ref. 52-22-01).

(14) Verify door operation (Ref. 52-22-00).

(15) Reinstall door lining (Ref. 52-24-01).

(16) Reinstall emergency slide container (Ref. 25-61-04).

(17) Reinstall doorway trim (Ref. 25-26-08).

(18) Close door.

C. Installation of Aft Gearbox

(1) Verify that door controls are tagged.

(2) Verify that all protective caps are removed and gearbox mounting surfaces are clean.

(3) Install gearbox so that cam followers fit inside door track.

(4) Apply sealing compound under head and on shank of mounting bolts.

(5) Wet-install mounting bolts.

(6) Install pinion gear, track guide plate, new lockwasher, and pinion retaining bolt.

(7) Torque bolt to 200 to 300 lb in.

(8) Bend up at least two lockwasher tabs next to flat sides of bolt head.

R CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST LINE UP WITH FEMALE SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT. IF MALE END OF SHAFT WILL NOT ENGAGE WITH SOCKET, REMOVE C-CLAMPS FROM AFT TRACK AND RAISE AFT TRACK MINIMUM DISTANCE TO ALLOW ENGAGEMENT.

(9) Connect cross-drive flexible shaft to gearbox. Tighten coupling nut finger-tight and lock-wire nut.

(10) Install speed limiter (Ref. 52-22-02).

(11) Remove C-clamps.

(12) Remove tags from door controls.

(13) Verify door operation (Ref. 52-22-00).

(14) Reinstall door lining (Ref. 52-24-01).

(15) Reinstall emergency slide container (Ref. 25-61-04).

(16) Reinstall doorway trim (Ref. 25-26-08).

(17) Close door.

EMERGENCY DOOR CROSS-DRIVE FLEXIBLE SHAFT - REMOVAL AND INSTALLATION

1. General

A cross-drive flexible shaft is located over each emergency exit door in zone 270. The cross-drive flexible shafts interconnect the cross-drive gearboxes on each side of the door.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

3. Referenced Procedures

25-26-01 Forward, Mid and Aft Ceiling Trim Drop Panels - Removal and Installation

52-22-00 Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Close emergency exit door.

R WARNING: DO NOT OPERATE DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

(2) Tag door Controls.

(3) Gain access to cross-drive shaft by lowering ceiling panel above applicable door.

R WARNING: INSTALL RIG PIN IN COUNTER BALANCE BEFORE REMOVING CROSS-DRIVE FLEXIBLE SHAFT.

(4) With inner emergency PULL DOWN handle in stowed position, install rig pin through brake cam yoke into counterbalance (Ref. Fig. 401).

(5) Unscrew cross-drive flexshaft coupling nuts at cross-drive gearboxes.

(6) Remove flexible shaft support clamps and remove flexible shaft.

B. Installation

(1) Verify the following:

(a) Door closed

(b) Door controls tagged

R CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST BE ALIGNED WITH SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT.

(2) Connect forward and aft cross-drive flexible shaft coupling nuts and tighten fingertight.

(3) Lock-wire forward and aft coupling nuts to bolt heads on adjacent structure.

(4) Install flexshaft support clamp.

(5) Verify that inside emergency control handle is stowed.

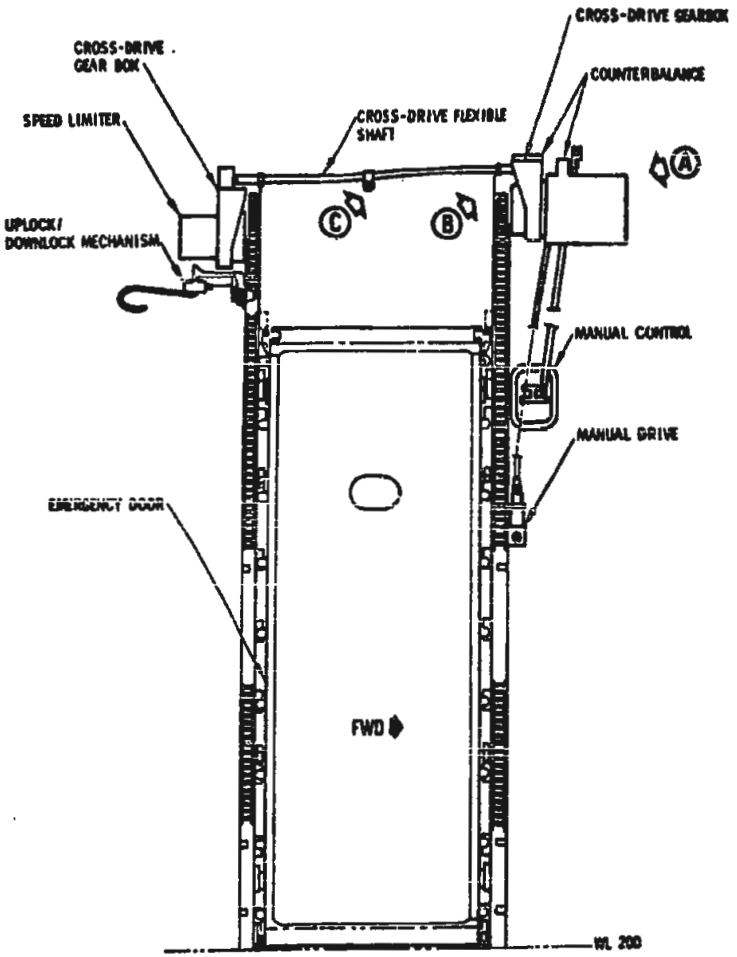
(6) Remove rig pin from brake cam yoke and counterbalance.

(7) Close ceiling panel (Ref. 25-26-01).

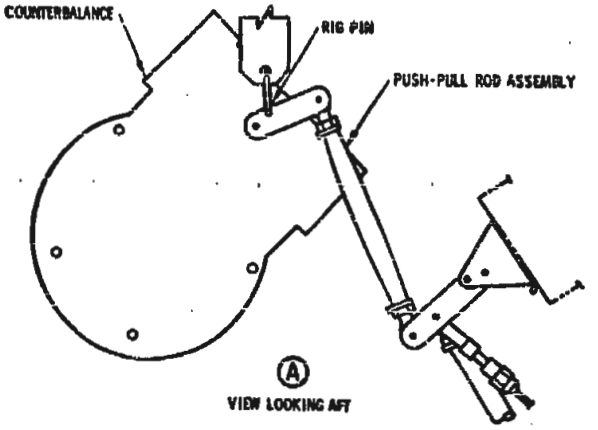
(8) Remove door control tag.

(9) Perform Operational Test - Emergency Mode from Inside Aircraft (Ref. 52-22-00).

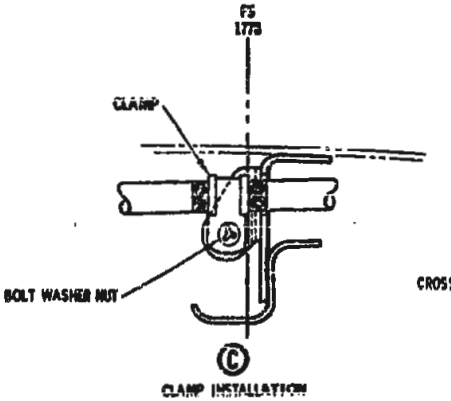
(10) Close emergency door (Ref. 52-22-00).



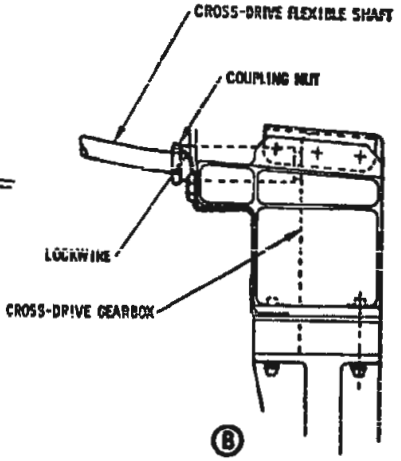
EMERGENCY EXIT DOOR
ZONE 270
VIEW LOOKING OUTBOARD
LEFT DOOR SHOWN - RIGHT DOOR OPPOSITE



Ⓐ VIEW LOOKING AFT



Ⓒ CLAMP INSTALLATION



Ⓑ FLEXIBLE SHAFT INSTALLATION (TYP)

M1-1300-52-104

R Cross-Drive Flexible Shaft - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL
R
013B

R EMERGENCY DOOR TRACK PINION GEAR - REMOVAL AND INSTALLATION

1. General

A door track pinion gear is mounted to each cross-drive gearbox at the forward side and aft side above each P-5 door, zone 270. These procedures are applicable for the removal and installation of the four pionion gears.

2. Equipment and Materials

C Gear puller, PN GEN 3154

3. Referenced Procedures

25-26-01	Ceiling Trim Drop Panel - Removal and Installation
25-26-08	Passenger Entry Shroud and Trim - Removal and Installation
25-61-04	Double Slide Door-mounted Container - Removal and Installation
52-22-00	Emergency Exit Door Actuation System - Adjustment and Test
52-24-01	Door Lining - Removal and Installation

3. Removal/Installation

A. Removal

(1) Remove doorway trim from applicable side of doorway (Ref. 25-26-08).

(2) Open door approximately 3 inches (Ref. 52-22-00).

(3) Remove emergency slide container (Ref. 25-61-04).

(4) Remove door lining (Ref. 52-24-01).

(5) Close door.

(6) Install rigpin in counterbalance.

(7) Tag door controls.

(8) Secure door track against door track guides using C-clamp at either No. 1 or No. 7 guide.

(9) Gain access to pinion gear by lowering ceiling panel inboard of P-5 door (Ref. 25-26-01).

(10) Bend down lockwasher tabs at pinion retaining bolt.

(11) Remove pinion retaining bolt, lockwasher, and track guide plate.

(12) Use gear puller to remove pinion gear. Install protective cap on pinion gear spline.

B. Installation

(1) Verify that door controls are tagged.

(2) Remove protective cap and clean pinion gear spline.

(3) Install pinion gear on spline.

(4) Install track guide plate, new lockwasher, and pinion retaining bolt.

(5) Torque bolt to 200 to 300 lb in.

(6) Bend up at least two lockwasher tabs next to flat sides of bolt head.

(7) Remove C-clamps.

(8) Remove tags from door controls.

(9) Remove rigpin from counterbalance.

(10) Verify door operation (Ref. 52-22-00).

(11) Replace ceiling panel (Ref. 25-26-01).

(12) Replace door lining (Ref. 52-24-01).

(13) Replace emergency slide container (Ref. 25-61-04).

(14) Replace doorway trim (Ref. 25-26-08).

(15) Close door.

EMERGENCY DOOR TRACK - REMOVAL AND INSTALLATION

1. General

Door tracks are mounted to the forward and aft sides of each L4 or R4 door, zone 270. These procedures are applicable to the removal and installation of the four door tracks.

2. Equipment and Materials

Rigpin, PN B994, or equivalent

Protective caps

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Bubble protractor

3. Referenced Procedures

25-26-01	Ceiling Trim Drop Panel - Removal and Installation
25-61-04	Double Slide Door-mounted Container - Removal and Installation
52-22-00	Emergency Exit Door Actuation System - Adjustment and Test
52-24-01	Door Lining - Removal and Installation

4. Removal/Installation

A. Removal

(1) Open door approximately 3 inches (Ref. 52-22 00).

(2) Remove emergency slide container (Ref. 25-61-04).

(3) Remove door lining (Ref. 52-24-01).

(4) Close door.

R WARNING: DO NOT OPERATE EMERGENCY EXIT DOOR WHILE
R MAINTENANCE IS BEING PERFORMED ON DOOR AS PERSONAL INJURY MAY RESULT.

(5) Tag door controls.

(6) Gain access to counterbalance by lowering ceiling panel inboard of door (Ref. 25-26-01).

R (7) Install rigpin in counterbalance (Ref. Fig. 401).

(8) Bend down lockwasher tabs at pinion retaining bolt.

(9) Remove pinion retaining bolt, lockwasher, and track guide plate.

(10) If removing forward track, support aft track at lower end.

(11) Disconnect cross-drive flexible shaft from gearbox. Install protective caps on shaft and gearbox couplings.

(12) Loosen pivot antirotation setscrew, at lower door link, two turns.

(13) Remove lower pivot bolt, pivot, and pivot shims. Identify and retain shims in groups as removed.

(14) Remove upper pivot and pivot shims. Identify and retain shims in groups as removed.

(15) Rotate both links outboard to clear track.

(16) Move track toward center of door until track is clear of cam followers on gearbox. Remove track.

B. Installation

(1) Verify that door controls are tagged.

R (2) Verify that rigpin is installed in counterbalance (Ref.
R Fig. 401).

(3) With cam follower assembly on gearbox rotated into path of track, install track so that track guide rollers and gearbox cam followers fit inside track.

R (4) On aircraft 034-036,
R adjustable track guide rollers are installed which can
R be adjusted radially (±0.08) to reduce track friction.
R Adjust as follows:

R (a) Loosen nut and disengage splined keeper from
R eccentric guide roller shaft (Ref. Fig. 402).

R (b) Rotate eccentric guide roller shaft clockwise
R until roller contacts side of door track [Mark

R eccentric roller shaft and fitting to index
R position (Ref. Fig. 402)].

R (c) Rotate eccentric roller shaft counter-clockwise
R until roller contacts side of door track [Note
R position of index mark on eccentric roller shaft
R and mark fitting to index position (Ref. Fig.
R 402)].

R (d) Locate index mark on eccentric roller shaft
R between the index marks on fitting to center guide
R roller in door track (Ref. Fig. 402).

R (e) Engage splined keeper and torque nut 75 to 150 lb.
R in. (5) Install track guide plate, new
R lockwasher, and pinion retaining bolt (Ref. Fig.
R 401). (6) Torque bolt 200 to 300 lb in. and bend
R up at least two lockwasher tabs next to flat sides
R of bolt head.

(7) Attach upper door link to track with pivot and pivot shims. Reinstall shims in groups identified in Step 4A(11).

(8) Attach lower door link to track with pivot, pivot chims, and pivot bolt. Reinstall shims in groups identified in Step 4A(10). Do not tighten bolt.

(9) Align arrowhead on pivot with antirotation setscrew at lower pivot link. Do not tighten setscrew.

(10) Tighten pivot bolt. Lock-wire pivot bolt to pivot. Tighten setscrew.

(11) Install rigpin in each lower link.

(12) Adjust angle at lower link of forward track by turning manual drive socket.

NOTE: Angle is measured by resting bubble protractor on rigpin.

Aircraft must be level laterally within ±0.50 degree.

(13) Adjust angle at lower link of aft track.

CAUTION: MALE END OF CROSS-DRIVE FLEXIBLE SHAFT MUST LINE UP WITH FEMALE SOCKET ON GEARBOX. DO NOT USE COUPLING NUT TO FORCE ENGAGEMENT.

IF MALE END OF SHAFT WILL NOT ENGAGE WITH SOCKET, RAISE AFT TRACK MINIMUM DISTANCE TO ALLOW ENGAGEMENT.

(14) Connect shaft to gearbox. Tighten coupling nut finger-tight and lock-wire nut.

(15) Remove rigpins from lower links.

(16) Remove rigpin from counterbalance.

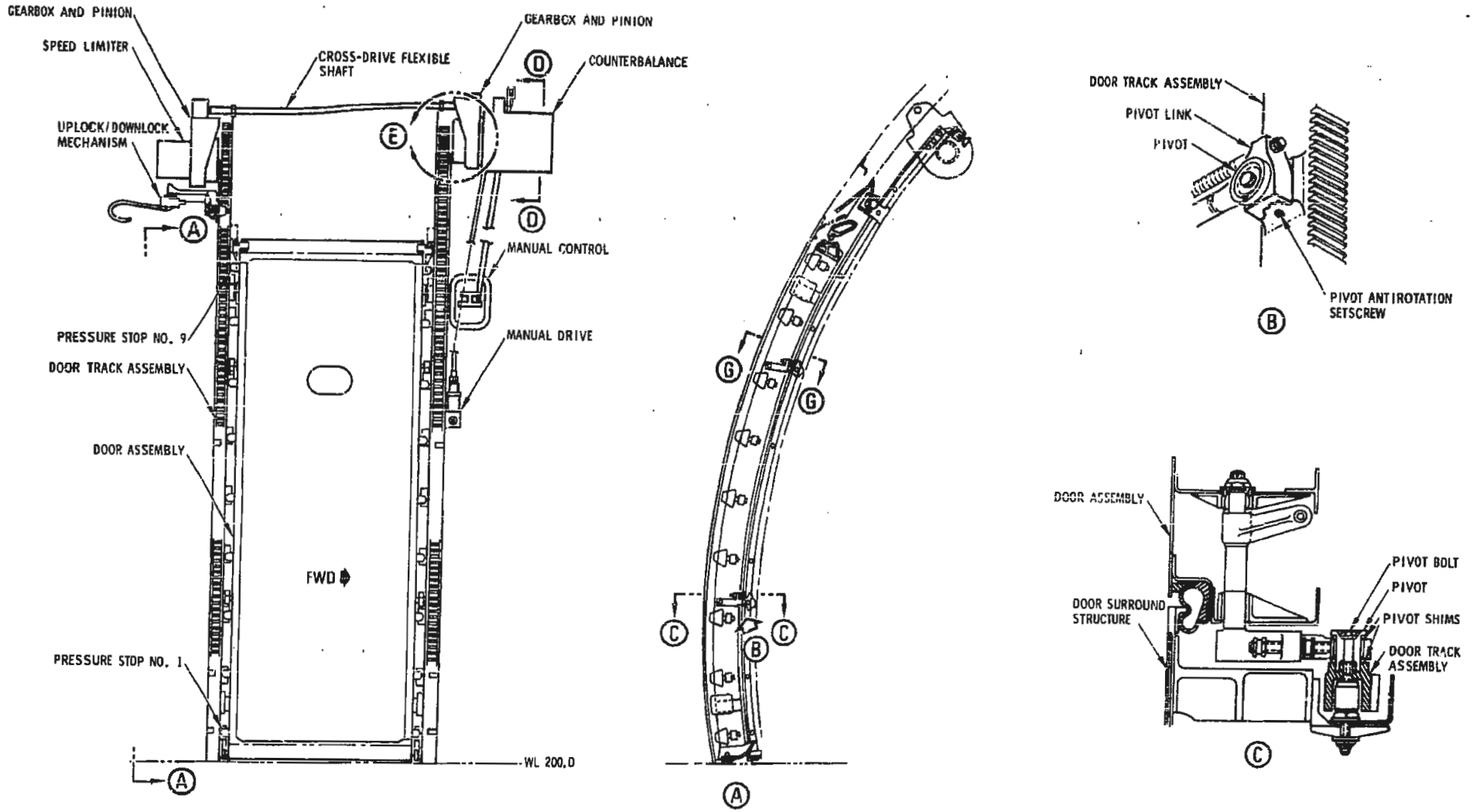
(17) Remove support from aft track, if required.

(18) Remove tags from door controls.

(19) Verify door operation (Ref. 52-22-00).

(20) Replace ceiling panel (Ref. 25-26-01).

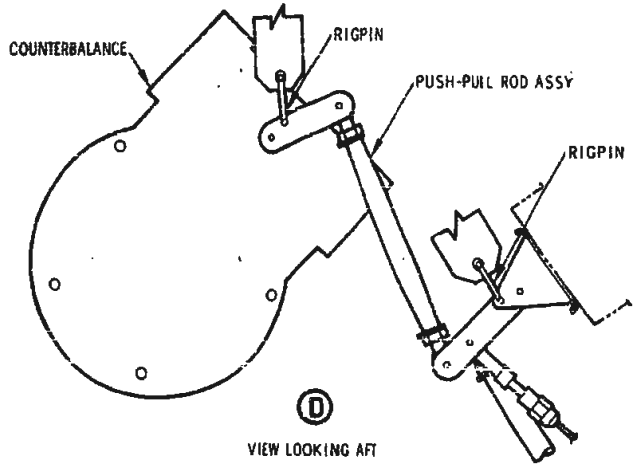
(21) Reinstall emergency slide container (Ref. 25-61-04).

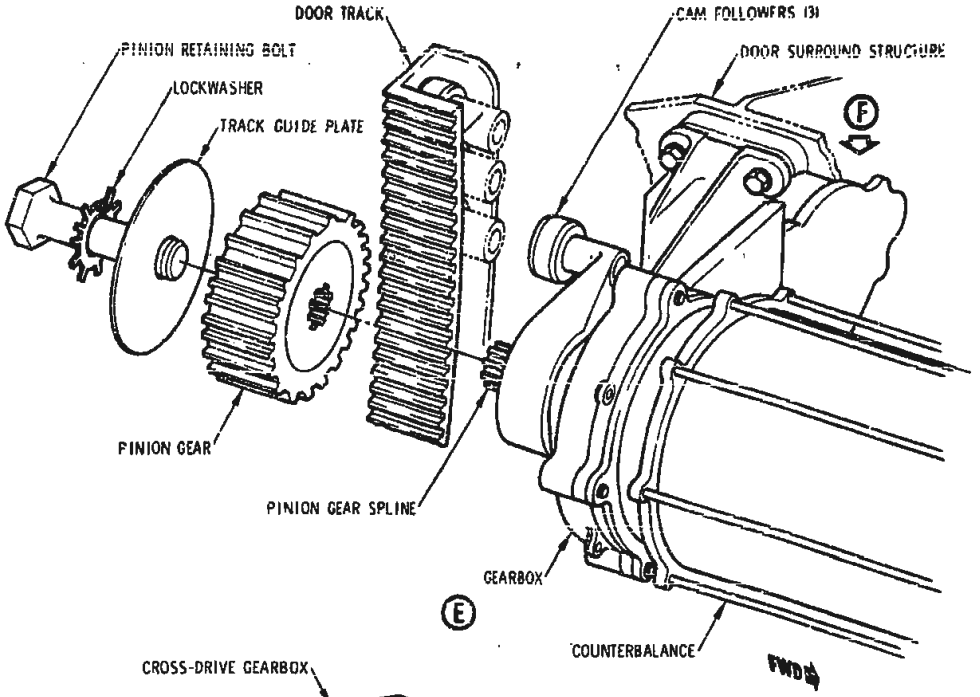


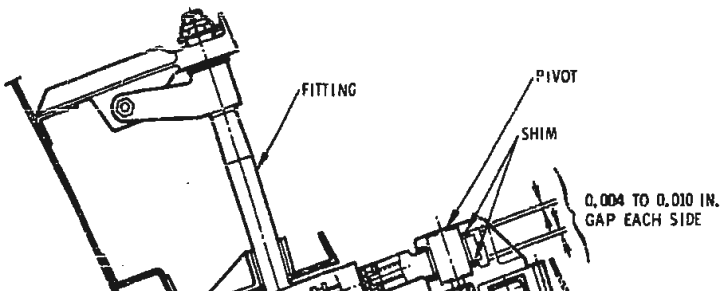
Q 1858
M1-0101-52-022

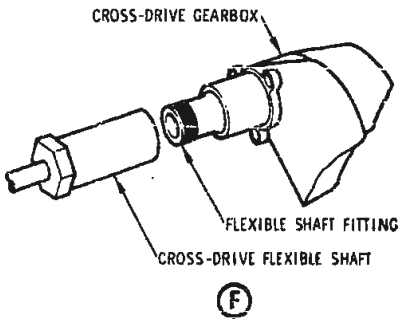
R Door Track - Removal and Installation
R Figure 401 (Sheet 1)

EFFECTIVITY: ALL





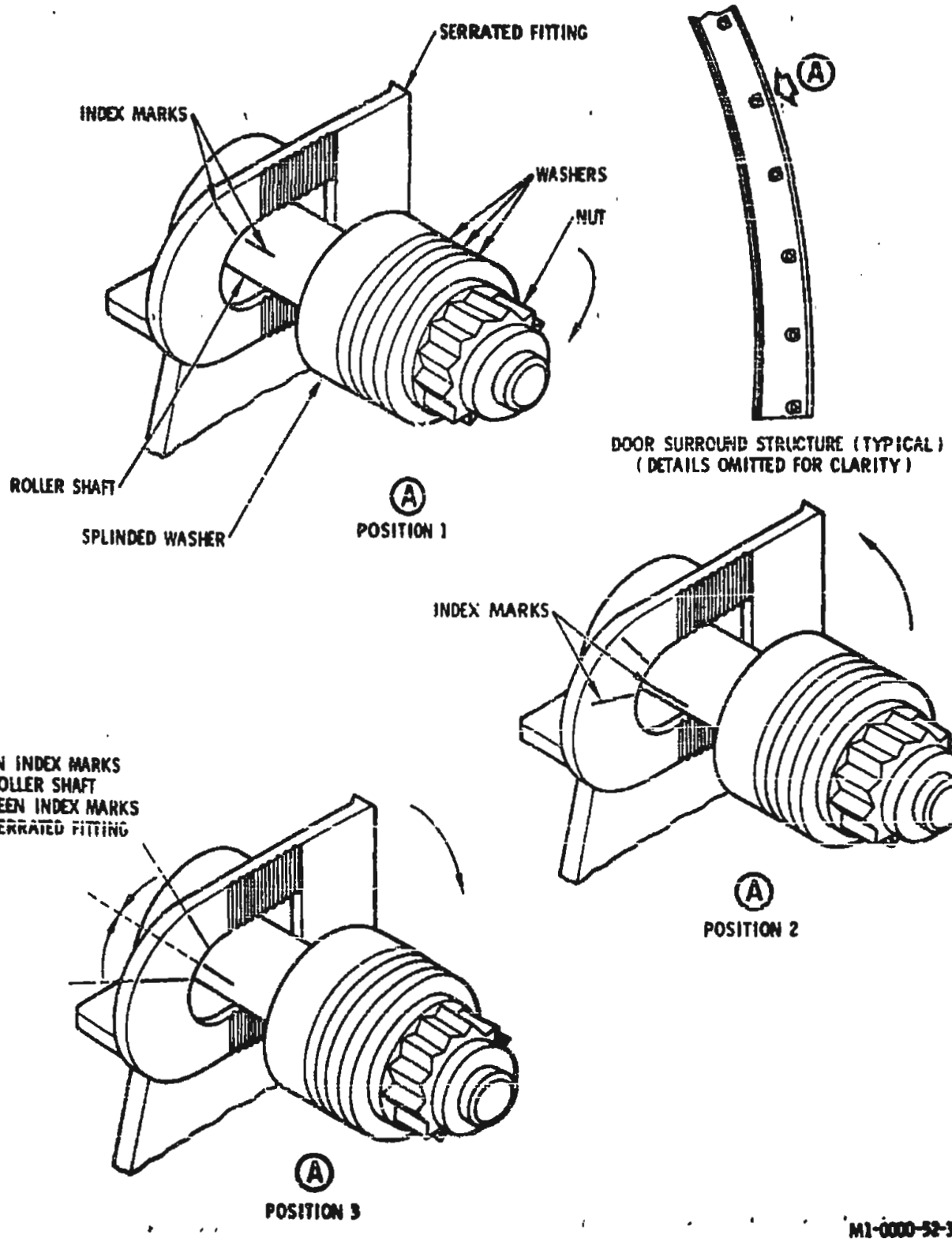




G 1849
M1-0100-52-090

R Door Track - Removal and Installation
R Figure 401 (Sheet 2)

R EFFECTIVITY: ALL
R
050



R Emergency Door Track Guide Roller Adjustment
R Figure 402

R EFFECTIVITY: 334-336
R
001B

R EMERGENCY DOOR MANUAL TWO-WAY ANGLE DRIVE - REMOVAL AND INSTALLATION

1. General

Manual two-way angle drives are located forward of the L4 or R4 emergency exits, zones 271 and 272. The removal and installation procedures for the two angle drives are the same.

2. Equipment and Materials

Sealant, C-40-769 Type I, or equivalent

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Protective caps

3. Referenced Procedures

20-51-04	Environmental Sealing of Model L-1011 Airplane - Maintenance Practices
25-26-08	Passenger Entry (Type A) and Emergency Exit (Type I) Doors Shroud and Trim - Removal and Installation
52-12-00	Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Remove doorway lining forward of door (Ref. 25-26-08).

(2) Disconnect manual drive flexible shaft at angle drive (Ref. Fig. 401). Install protective caps on shaft and angle drive fittings.

(3) Remove mounting bolts, washers, nuts, and bushings at inboard mounting surface of angle drive.

(4) Support drive while removing mounting bolts, washers, bushings, and nuts at top of drive.

(5) Remove angle drive.

(6) Replace bolts, washers, bushings, and nuts in top of drive.

B. Installation

(1) Verify that all mounting surfaces are clean.

R (2) Mount top of drive to bracket using outboard housing
R mounting bolts. Wet-install mounting bolts with sealant (Ref. 20-51-04).

(3) Install bushings in mounting holes at inboard mounting surface.

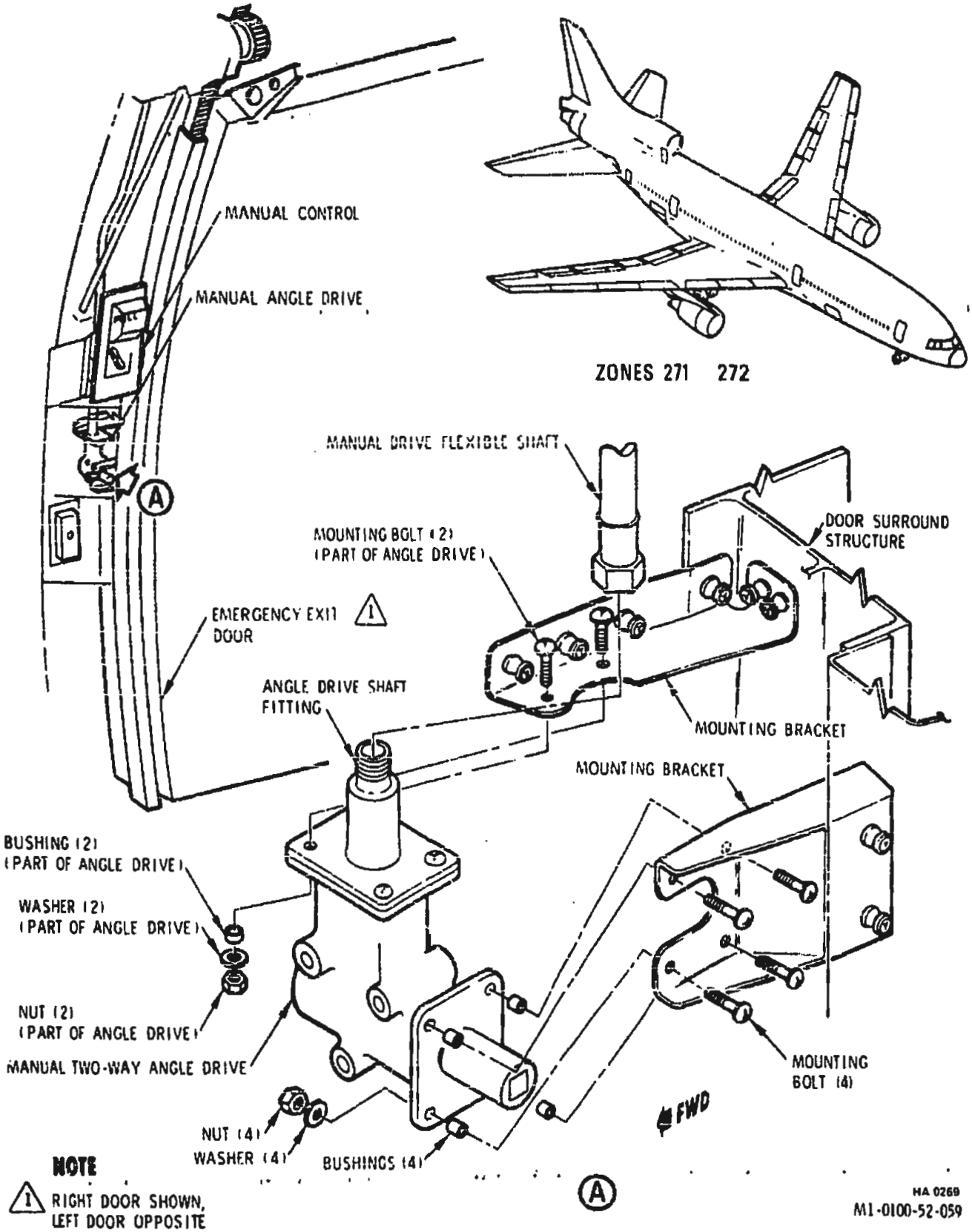
(4) Mount inboard mounting surface of drive to bracket. Wet-install mounting bolts.

(5) Remove protective caps and connect manual drive flexible shaft to angle drive.

(6) Lock-wire shaft fitting to drive.

(7) Verify manual door operation (Ref. 52-12-00).

(8) Install doorway lining (Ref. 25-26-08).



NOTE

1 RIGHT DOOR SHOWN, LEFT DOOR OPPOSITE

R R Manual Two-way Angle Drive - Removal and Installation
Figure 401

R R EFFECTIVITY: ALL

EMERGENCY DOOR UPLOCK/DOWNLOCK MECHANISM - ADJUSTMENT AND TEST

1. General

This procedure outlines the rigging adjustments necessary to ensure the operation of the uplock/downlock mechanism at each emergency (L/R4) door.

2. Equipment and Materials

Rigpin, PN 994, or equivalent

3. Referenced Procedures

23-41-00	Cabin/Galley Interphone System - Adjustment and Test
52-22-00	Door Actuation System - Adjustment and Test
52-22-11	Door Handle Assembly - Adjustment and Test

4. Adjustment/Test

A. Rigging Adjustments

WARNING: DO NOT OPERATE EMERGENCY DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(1) Verify that emergency door is closed and door controls are tagged.

(2) Verify that rig pin can be inserted through rig holes in mounting bracket and control rod bellcrank.

(a) If rig pin cannot be inserted with inner and outer control handles fully stowed, handle assembly must be adjusted before continuing (Ref. 52-22-11).

(b) If slack is evident at either end of control cable, remove slack before continuing.

(3) Verify protrusion of lockpin through door aft track as follows:

R CAUTION: WHEN PULLING DOOR TRACK, TAKE CARE NOT TO DEFORM TRACK.

(a) In vicinity of pinion gear pull track forward with force of approximately 50 pounds, or until track contacts pinion gear guide plate; verify that pin protrusion from track is 0.130 inch minimum.

(b) In vicinity of lockpin push track aft until it contacts track guide rollers; verify that lockpin protrusion from forward surface of track does not exceed 0.270 inch.

(c) If corrections must be made, shorten or lengthen cable by adjusting cable rod-end fitting.

NOTE: The control handle must remain fully stowed during adjustments.

The lockpin shoulder need not contact the pin support fittings. The cable must have no slack.

Service Bulletin 52-047 installs a longer lock pin, if required.

(4) Verify operation of door warning light on Flight Engineer/Second Officers annunciator panel and DOOR OPEN light on pilots center instrument panel as follows:

(a) Position observer in flight station to observe door warning lights.

NOTE: Cabin/Galley interphone (Ref. 23-41-00) may be used for communication between flight station and any passenger door.

R WARNING: IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN DEPLOYMENT OF EVACUATION SLIDE.

(b) Place evacuation slide selector lever in DETACH position.

R WARNING: DO NOT PULL EMERGENCY PULL DOWN HANDLE WITH EVACUATION SLIDE SELECTOR LEVER IN ENGAGE POSITION.

(c) Remove plastic cover from emergency PULL DOWN handle and slowly pull handle until door warning light and DOOR OPEN light come on, as witnessed by observer in flight station.

(d) Verify that lockpin has retracted a minimum of 0.060 inch, with pin protruding a minimum of 0.040

inch with track pulled forward as described in Step (3)(a).

(e) If pin protrusion is less than 0.040 inch, adjust proximity sensor farther from target.

(f) If pin travel is less than 0.060 inch, adjust proximity sensor closer to target.

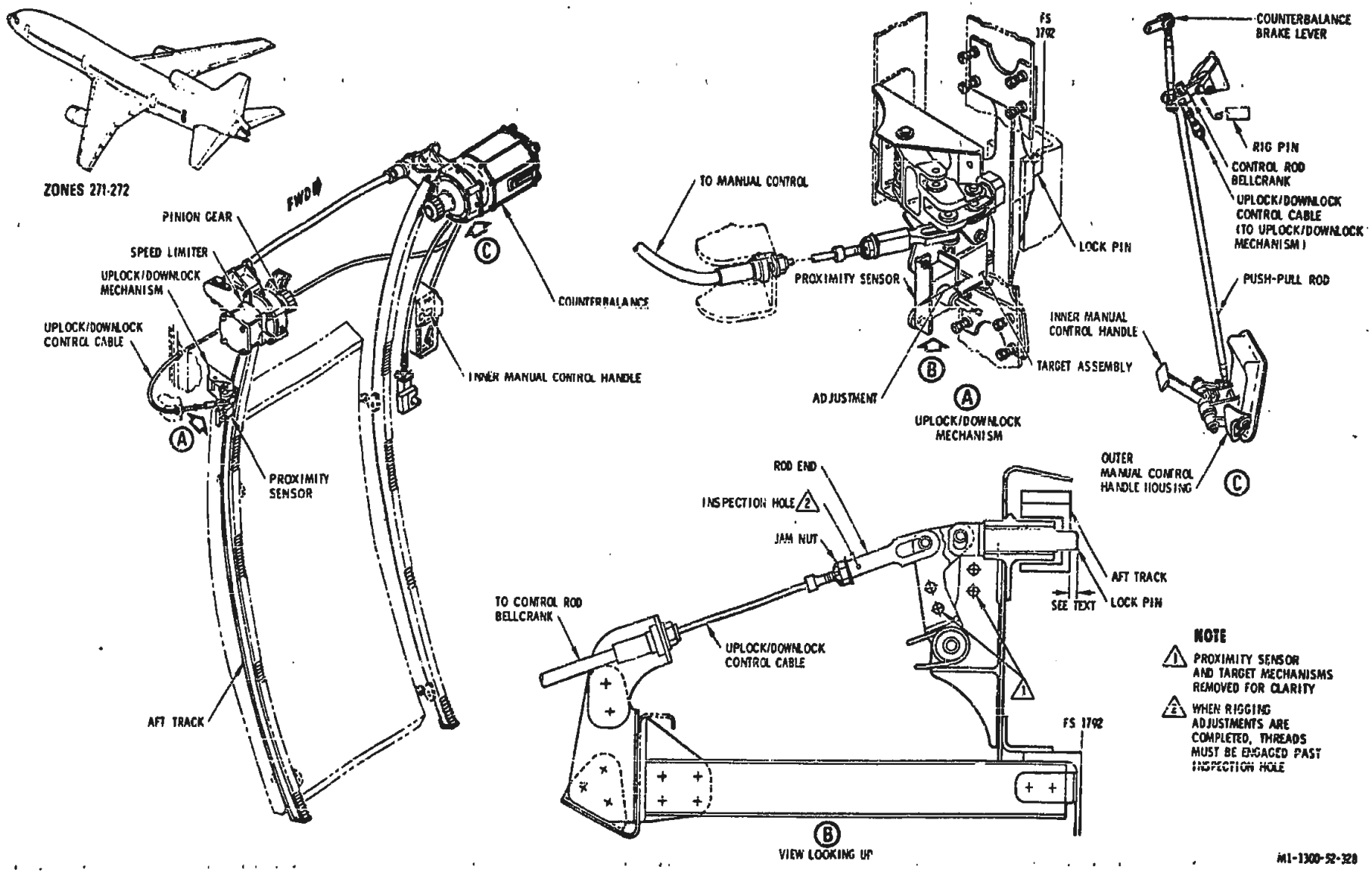
(g) Restow emergency PULL DOWN handle.

(h) Repeat Steps (c) through (g) until functional requirements are met.

(5) Pull handle from fully stowed position to first detent position. Verify that lock pin retracts a minimum of 0.45 inch to clear track. Restow handle.

(6) Remove door control tags.

(7) Verify door operation (Ref. 52-22-00).



R Emergency Door Uplock/Downlock Mechanism - Adjustment and Test
R Figure 501

R EFFECTIVITY: ALL
R
001B

R EMERGENCY DOOR UPLOCK/DOWNLOCK MECHANISM - INSPECTION AND CHECK

1. General

This procedure outlines the steps to be performed to inspect the uplock/downlock mechanism at each emergency door.

2. Referenced Procedures

23-41-00	Cabin/Galley Interphone System - Adjustment and Test
25-26-01	Ceiling Trim Door Panel - Removal and Installation
52-22-00	Door Actuation System - Adjustment and Test
52-22-01	Counterbalance - Removal and Installation
52-22-10	Uplock/Downlock Mechanism - Adjustment and Test

3. Inspection/Check

A. Inspection of Lockpin Protrusion

(1) Close door. Verify that applicable door warning light on Flight Engineer/Second Officers annunciator panel, zone 215, is out.

R WARNING: DO NOT OPERATE DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(2) Tag manual door controls.

(3) Lower ceiling panel inboard of door (Ref. 25-26-01).

R CAUTION: WHEN PULLING DOOR TRACK, TAKE CARE NOT TO DEFORM TRACK IN ANY WAY.

(4) Pull aft door track forward against door track guide plate on pinion gear and hold.

(5) Verify that lockpin protrusion from forward surface of door track is 0.130 inch minimum.

(6) Push door aft track aft in vicinity of lock-pin until track contacts track guide rollers. Verify that lockpin protrusion from forward surface of door track does not exceed 0.270 inch.

(7) If dimensions referenced in Steps (5) and (6) cannot be obtained, rig lock-pin (Ref. 52-22-10).

(8) Verify operation of door warning light on Flight Engineer/Second Officers annunciator panel and DOOR OPEN light on pilots center instrument panel as follows:

(a) Position observer in flight station to observe door warning lights.

NOTE: Cabin/Galley interphone (Ref. 23-41-00) may be used for communication between flight station and any passenger door.

R WARNING: IMPROPER DOOR OPERATING PROCEDURE CAN RESULT IN DEPLOYMENT OF EVACUATION SLIDE.

(b) Place evacuation slide selector lever in DETACH position.

R WARNING: DO NOT PULL EMERGENCY PULL DOWN HANDLE WITH EVACUATION SLIDE SELECTOR LEVER IN ENGAGE POSITION.

(c) Remove plastic cover from emergency PULL DOWN handle and slowly pull handle until door warning light and DOOR OPEN light come on, as witnessed by observer in flight station.

(d) Verify that lockpin has retracted a minimum of 0.060 inch.

(e) With aft door track pulled forward against door track guide plate on pinion gear, verify that lockpin protrudes 0.040 inch minimum from forward surface of door track.

(f) If dimensions referenced in Steps (d) and (e) are not obtained, readjust proximity sensor (Ref. 52-22-10).

(g) Restow emergency PULL DOWN handle.

(9) Remove door control tags.

(10) Verify door operation (Ref. 52-22-00).

(11) Close ceiling panel.

B. Quick check of Lockpin Protrusion

(1) On each emergency door check for lockpin protrusion through door aft track by either of the following:

(a) Push spring-loaded blowout door in trap door upward for access and use flashlight and mirror to inspect lockpin.

(b) Push spring-loaded blowout door in trap door upward, reach hand through hole to feel pin protrusion.

C. Quick Check of Lockpin Freedom of Motion

This check is used to verify that the lockpin is free enough to be withdrawn from the door track when operated manually or electrically with the door in the closed and locked position.

(1) With the door closed and locked, check for lockpin freedom of motion as follows:

(a) Gain access to lockpin through spring-loaded blowout door in trap door.

(b) Manually depress (push in) lockpin and then release it. Verify that lockpin can be depressed freely without binding, and that it returns freely to its fully extended position in the door track cutout.

(c) If there is any evidence of binding between the lockpin and track, reclose door and repeat the above check.

(2) If lockpin does not operate freely as described, investigate the following for source of binding.

(a) Check lockpin for contact with cutout in track. If lockpin contacts roller in track cutout, replace counterbalance (Ref. 52-22-01).

NOTE: Counterbalance "no-back" mechanism malfunction is indicated.

(b) Check for binding of lockpin in pin support fitting. Verify fitting-to-pin interface is free of paint or other contamination.

(c) Check lockpin for evidence of binding and correct if necessary.

(d) Lubricate lockpin as required.

R

EMERGENCY DOOR HANDLE ASSEMBLY - REMOVAL AND INSTALLATION

1. General

This procedure must be used to remove a L4 or R4 emergency exit door handle, and to install the same handle at the same location. If a handle, other than the one removed, is to be installed, refer to adjustment and test (Ref. 52-22-11).

2. Equipment and Materials

Rigpin, PN B994, or equivalent

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

3. Referenced Procedure

52-22-11 Door Handle Assembly - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Remove clear plastic cover from door handle assembly forward of door.

(2) Remove frame around selector lever.

(3) Verify that inner and outer handles are latched.

(4) Install rigpins (Ref. Fig. 401).

(5) Disconnect control rod by removing bolt, nut, and washer (Ref. Fig. 401).

(6) With latch supported, remove screws attaching handle to structure.

(7) Remove handle.

B. Installation

(1) Verify that rigpins installed in Step 4A(4) are in place.

(2) Insert handle in opening.

(3) Install screws to attach handle to structure.

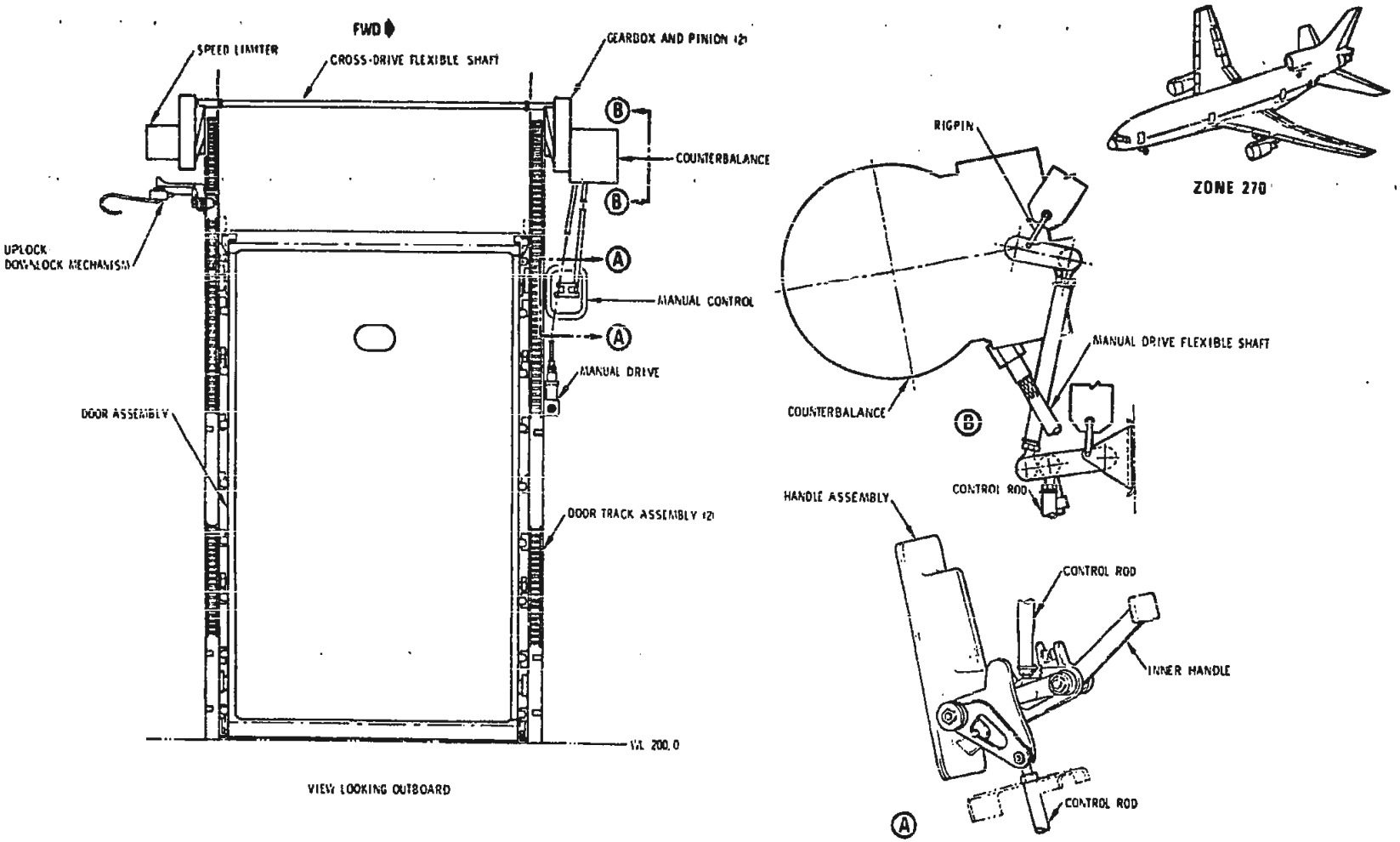
(4) Install screw, nut, and washer in control rod and lock-wire.

(5) Remove rigpins.

(6) Verify latch operation.

(7) Install frame around selector lever.

(8) Install clear plastic cover over door handle assembly forward of door.



R Door Handle Assembly - Removal and Installation
R Figure 401

EFFECTIVITY: ALL

001B

EMERGENCY DOOR HANDLE ASSEMBLY - ADJUSTMENT AND TEST

R 1. General

R This section contains procedures for checking adjustment of the
R emergency door handle assembly and for checking adjustment of
R the door handle control system.

R The emergency door outer handle has four positions, including
R the fully stowed and latched position plus three functional
R "detent" positions. The door inner handle has only three
R positions; essentially corresponding to the three detent
R positions of the emergency door outer handle mechanism. The
R stowed (full-up) position of the inner handle is referred to as
R "first detent". Similarly, the first pull-down position of the
R inner handle is referred to as the "second detent" and the full
R down position as "third detent" (just as the full down position
R of the door outer handle is the "third detent.").

R "Detent" positions specifically refer to the three possible
R positions of the ball end of the spring plunger assembly as it
R rides over the detent plate (Ref. Fig. 501).

R 2. Equipment and Materials

R Push-Pull Gage, DPP-30, Chatillon Co. Kew Gardens, NY City, NY,
R or equivalent

Rigpin, PN B994, or equivalent

R Lock-wire, Fed Spec QQ-W-390, 0.032 inch diameter, or equivalent

R Mirror, Round (approximately 1.0 inch diameter)

R Grease, General Purpose, MIL-G-23827, or equivalent.

R 3. Referenced Procedures

R	52-22-00	Emergency Exit Door Actuation System - Adjustment and Test
R	52-22-10	Emergency Door Uplock/Downlock Mechanism - Inspection and Check
R	52-22-11	Emergency Door Handle Assembly - Removal and Installation

R 4. Adjustment/Test

R A. Emergency Door Inner Handle Spring-back Check

R WARNING: OPERATION OF PASSENGER DOOR INNER HANDLE TO FULL
R DOWN POSITION WITH EVACUATION SLIDE SELECTOR LEVER
R IN ENGAGE POSITION WILL DEPLOY EVACUATION SLIDE.

R (1) Place evacuation slide selector lever in DETACH
R position.

R (2) Remove cover over emergency door inner handle.

R (3) Pull inner handle full down to operate door against
R upper bumper stops.

R (4) Remove rubber boot which surrounds inside handle for
R access to backside of handle.

R (5) With door full open against bumpers, pull inner handle
R to full down position. Observe and feel for door
R handle movement in up direction.

R (6) Door handle spring-back in up direction must not exceed
R 0.125 inch. When spring-back is evident, spring
R plunger ball must not be allowed to move out of detent
R groove. Observe detent with mirror to verify.

R (7) To measure inner handle spring-back, perform the
R following:

R (a) Place one end of scale against inner handle bezel
R or support structure.

R (b) Measure movement at edge of "pull down" decal on
R end of inner handle. Take measurement when inner
R handle is held down and released.

R (8) When inner handle spring-back is present,
R disconnect lockpin push-pull cable and recheck for
R spring-back. If spring-back was eliminated,
R increase cable length as required to correct
R excessive spring-back condition and recheck
R lockpin rig (Ref. 52-22-10).

R (9) If inner handle spring-back was not eliminated,
R disconnect push rod at actuator clutch release and
R recheck for spring-back. If spring-back was
R eliminated, readjust counterbalance clutch release
R (Ref. Para. 4C).

(10) Lock all control rod ends with jamnuts and lock-wire. Verify tab on control rod locking device is indexed on aft side of each control rod assembly to avoid interfering with cable assembly.

(11) Perform Inner Handle Pull Load Check (Ref. Para. 4B).

B. *Inner Handle Pull Load Check*

(1) Manually crank door to closed position.

R WARNING: OPERATION OF EMERGENCY DOOR INNER HANDLE TO FULL DOWN POSITION WITH EVACUATION SLIDE SELECTOR LEVER IN ENGAGE POSITION WILL DEPLOY EVACUATION SLIDE.

(2) Place evacuation slide selector lever in DETACH position.

(3) Attach Push-Pull Gage to inside handle with a wire bridle.

(4) Using Push-Pull Gage, pull handle from full up stop to full down stop in one slow continuous movement. Gage reading must not exceed 25 pounds. Take reading until door starts to open.

NOTE: Pulling direction should be in a direction at right angles to handle rotational arc.

(5) If pull exceeds 25 pounds, all control rod pivot bearings should be disassembled and lubricated with all purpose grease after the following pull checks are made.

(6) Remove trim panel from around door control panel for access to backside of handle.

(7) Move handle to full up position and disconnect counterbalance push rod at counterbalance control rod arm (Ref. Fig. 502).

(8) With door in full up position move inner handle to full down position (third detent).

(9) Using Push-Pull Gage move handle in an upward direction out of full down position (third detent). Verify force required at end of inner handle is between 6 to 12 pounds.

NOTE: Pushing direction should be in a direction at right angles to handle rotational arc.

R (10) Move handle to full up (stowed) position (first detent).

R (11) Using Push-Pull Gage move inner handle in a downward direction out of full up (stowed) position (first detent). Verify force required at end of handle is between 6 to 12 pounds.

R (12) Move inner handle to center position (second detent).

R (13) Using Push-Pull Gage move inner handle in a downward direction out of center position (second detent). Verify force required at end of handle is between 6 to 12 pound.

R (14) Move inner handle to position between full up detent and center detent (spring plunger ball is not in groove).

R (15) Using Push-Pull Gage, move inner handle to center detent position. Verify force required at end of handle does not exceed 3.5 pounds.

R (16) If any of above push or pull test requirements were not satisfactory, perform the following steps.

R (a) If force required to move handle is less than six pounds, perform Steps (22) and (23) then repeat Steps (8) through (15).

R (b) If force required to move handle is more than 3.5 pounds perform Steps (17), (18), (19) and (20) then repeat Steps (8) through (15).

R (17) Remove arm with detent plate from handle and visually check condition of detent plate and spring plunger ball for pitting or excessive wear.

R (18) With detent plate removed, verify force required to move inner handle does not exceed 0.5 pound (2 lb in.) at end of handle using Push-Pull Gage.

R (19) If force required to move inner handle exceeds 0.5 pounds (2 lb in.), visually check handle shaft for straightness and support lugs for alignment. Lubricate handle shaft with general purpose grease and reinstall handle.

R (20) Install arm with detent plate.

R (21) If detent plate is replaced, also replace spring plunger. Verify replacement spring plunger has orange dot on screw driver end.

R (22) To increase door inner handle detent forces, decrease clearance between spring plunger and detent plate. A minimum clearance of 0.002 inch must be maintained between spring plunger and detent plate (Ref. Fig. 501).

R (23) To decrease door inner handle detent forces, increase clearance between spring plunger and detent plate. A maximum clearance of 0.005 inch must be maintained between spring plunger and detent plate.

R NOTE: If after adjusting spring plunger, proper door handle detent forces cannot be met, replace both detent plate and spring plunger. Verify replacement spring plunger has orange dot on screwdriver slot end.

R (24) If new detent plate and spring plunger are installed, operate door inner handle 20 times from stowed to full down positions. Repeat Steps 4B(8) through 4B(15).

R (25) Connect actuator push rod at passenger door handle.

R (26) Place door inner handle in full up position and verify spring plunger ball is in first detent, and stop bolt on pan assembly contacts stop on inner handle. Adjust stop if necessary.

R (27) Place door inner handle in full down position and verify spring plunger ball is in third detent and door inner handle cam follower arm is against inner handle stop (open position).

R (28) Place emergency door inner and outer handles in full down position (third detent).

R (29) Move emergency door outer handle in an upward (closing) direction until contact is made with exterior push button handle. Verify maximum force required to move outer handle does not exceed 0.5 pound.

R (30) If force required to move outer handle exceeds 0.5 pound, verify clearance of 0.005 to 0.010 inch exists between idler arm spacer and thrust washer and check condition of outer handle shaft and bushings. If necessary, adjust clearance by using laminated shim washers and/or repair wear surfaces and lubricate with general purpose grease before reassembly.

R WARNING: INSTALL BOOT WITH SLOT OPENING DOWN.

R (31) Install boot and trim around emergency door inner
R handle.

R (32) Install cover over door handle.

R (33) Perform operational test, emergency modes, from inside
R and outside aircraft (Ref. 52-22-00).

R C. Emergency Door Handle Control System - Rigging

R (1) Before rigging door handle verify the following:

R WARNING: OPERATION OF EMERGENCY DOOR INNER HANDLE TO
R FULL DOWN POSITION WITH EVACUATION SLIDE
R SELECTOR LEVER IN ENGAGE POSITION WILL DEPLOY
R EVACUATION SLIDE.

R (a) Evacuation slide selector lever in DETACH
R position.

R (b) Emergency door full open against bumper stops.

R (c) Trim around handle removed for access to handle
R link rods.

R (2) Verify door inner and outer handles are fully stowed
R (emergency door outer handle stowed and latched), as
R follows:

R (a) Verify inner handle is in fully stowed position
R (first detent) and contacts inner stop bolt.

R (b) Readjust stop bolt if required, and lock
R adjustment with jamnut.

R (c) Install rigpin (Ref. Fig. 502). Move arm as
R required to insert rigpin.

R (d) During rigging procedures lubricate all accessible
R pivot bolts with general purpose grease when pivot
R bolts are disconnected.

R (3) Connect counterbalance push rod at emergency door
R handle clutch control arm (Ref. Fig. 502) as follows:

R (a) Adjust control rod lower rod end to length
R required to install rod end in crank assembly with
R bolt, washers, and nut.

R (b) Remove rigpin.

R (4) With inner handle in full up position, crank door down
R to a position about two feet from full open.

R WARNING: COUNTERBALANCE CLUTCH ACTIVATION ARM TRAVEL MUST
R BE PROPERLY ADJUSTED WHEN DOOR INNER HANDLE IS IN
R CENTER POSITION (SECOND DETENT), OR COUNTERBALANCE
R CLUTCH MAY BE INADVERTENTLY RELEASED ALLOWING THE
R DOOR TO ACCIDENTALLY OPEN.

R (5) Move inner handle to center detent position.

R (6) Using push-pull gage, pull down handle with a force of
R 4 pounds, but not to exceed 4.5 pounds.

R NOTE: Pulling direction should be at right angles to
R handle rotational arc.

R (7) Clutch must not release, and handle plunger ball must
R not move out of center detent. Use mirror to verify.

R (8) If Steps (6) and (7) are not satisfied proceed as
R follows:

R (a) If clutch released to raise door while plunger
R ball was held in the center detent, lengthen push
R rod at counterbalance bellcrank by one turn of the
R rod-end fitting and repeat check [Ref. Steps (6)
R and (7)].

R (b) If handle plunger ball moves out of the center
R detent, perform Steps B(8) through (15), and
R repeat above check [Ref. Steps C(6) and (7)].

R (9) When Steps (5) through (7) above have been
R satisfactorily performed, pull inner handle to full
R down position and verify that clutch releases and door
R opens.

R (10) Fully stow emergency door inner and outer handles.

R (11) Move inner handle to center position (second detent)
R and verify lockpin is withdrawn a minimum of 0.45 inch.

R (12) Fully stow inner and outer handles.

R (13) Move door outer handle until girt blade at floor is
R disengaged. Inner handle must remain in full stowed
R position.

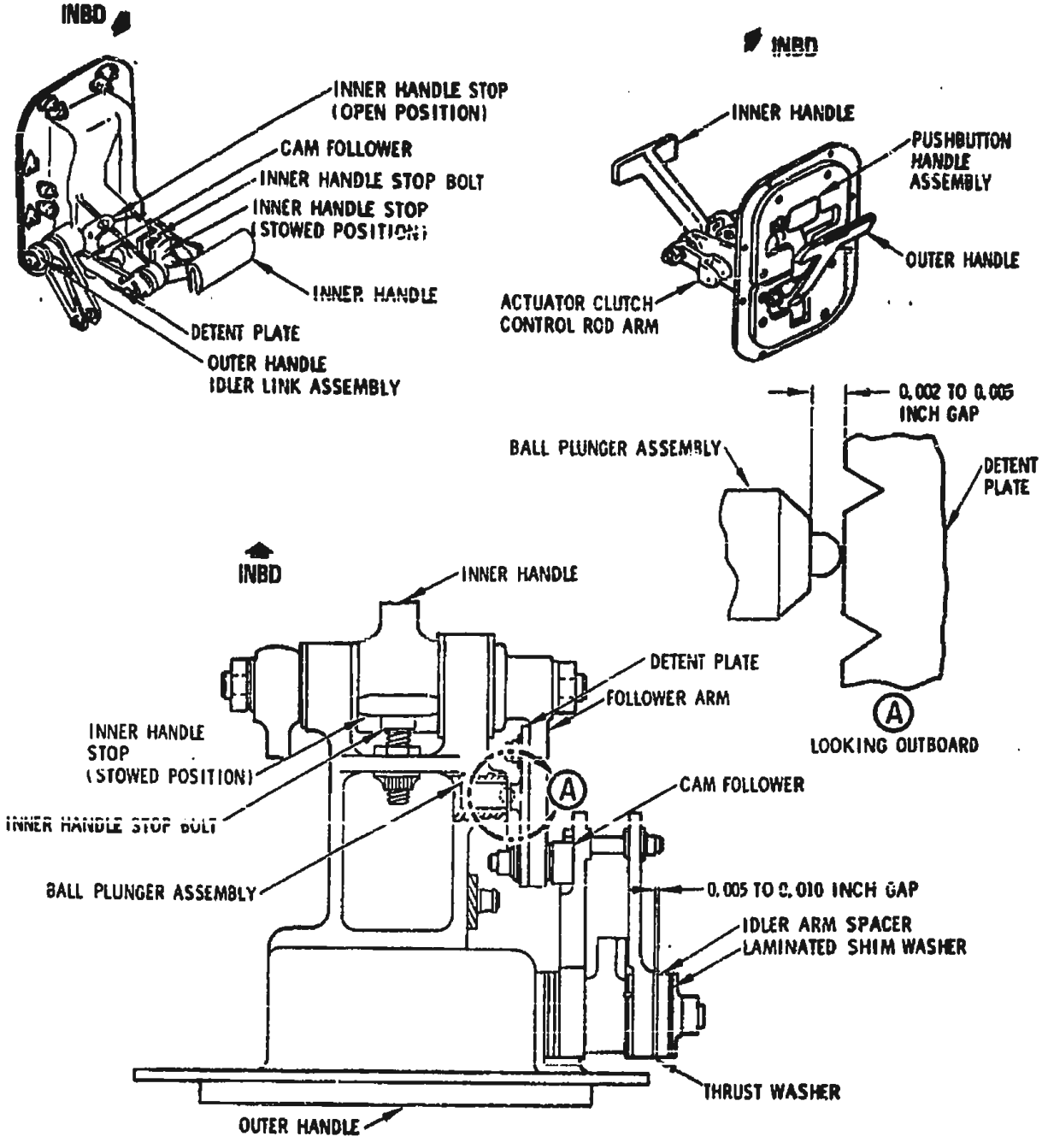
R (14) Move emergency door outer handle until inner handle is
R in center detent position. Verify that lockpin is
R pulled a minimum of 0.45 inch.

R R (15) Move door outer handle to full down position and verify handle moves to full down position (third detent).

R (16) Install trim around door inner handle.

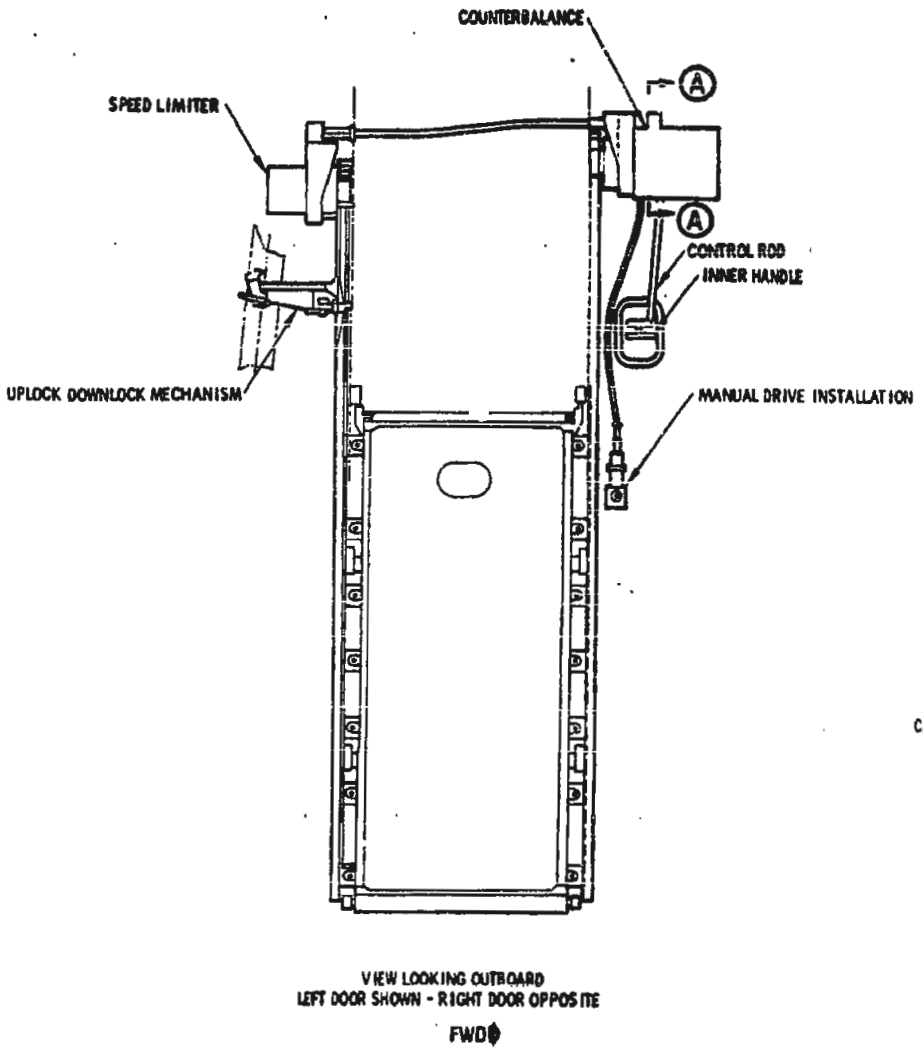
R (17) Install cover over door handle.

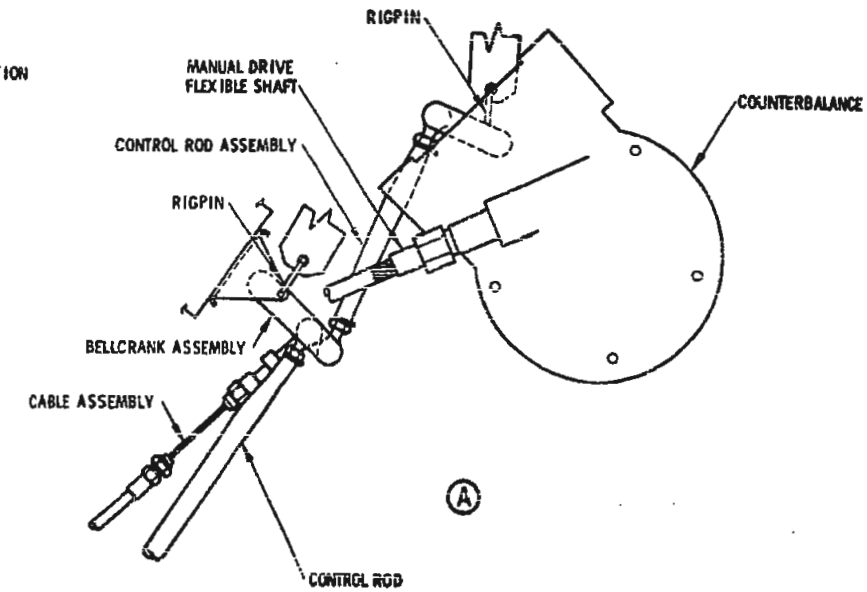
R R (18) Perform operational test, emergency modes, from inside and outside aircraft (Ref. 52-22-00).



MI-0001-52-015

Emergency Door Handle Rigging
Figure 501





M1-0000-52-908

R Emergency Door Control Rigging Adjustments
R Figure 502

R EFFECTIVITY: ALL
R
002B

R EMERGENCY DOOR UPLOCK/DOWNLOCK MECHANISM CONTROL CABLE - REMOVAL AND
R INSTALLATION

1. General

An uplock/downlock mechanism control cable is located above each emergency door in zones 271 and 272. One cable end is attached to the door lock mechanism and the other end is attached to control linkage of the door counterbalance.

Cable routing differs slightly at each door location, however, cable replacement procedures are the same.

2. Equipment and Materials

Cotter pin, MS24665-149

3. Referenced Procedures

52-22-00 Door Actuation System - Adjustment and Test

52-22-10 Uplock/Downlock Mechanism - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Close door.

R WARNING: DO NOT OPERATE DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR ACTUATION SYSTEM COMPONENTS.

(2) Verify that inside handle is in fully stowed position.

(3) Tag manual door controls.

(4) Gain access to applicable lock mechanism control cable by opening panels and removing trim as required above the doorway and along the upper forward and aft sides of the door surround structure.

(5) Install rig pin through brake cam yoke into counterbalance.

(6) At uplock/downlock mechanism, disconnect control cable rod end fitting by removing flathead pin, bearing, and washer. Retain parts for reinstallation.

R (7) At crank assembly located below counterbalance, disconnect control cable rod end by removing nut, bolt, bearings and washers. Retain parts for reinstallation.

R (8) Loosen jamnuts and remove rod end fitting from control cable terminal at both ends of cable.

R (9) Loosen or remove cable clamp support screws as required to remove control cable from support clamps. Remove cable from support clamps.

R B. Installation

R (1) Verify that door controls are in fully stowed position and tagged. Verify that rig pin is installed [Ref. Step 4A(5)].

R (2) Remove jamnut and washer from both ends of control cable housing and retain for installation.

R (3) Install control cable in clamps but do not tighten.

R (4) Install both ends of control cable housing in support brackets using washers and jamnuts.

R (5) Position control cable housing as required to distribute evenly without sharp bends along entire length. Maintain bend radius of over four inches. Then install, or tighten, cable support clamps with attaching hardware.

R (6) Install jamnut and rod end fittings on control cable terminal fittings at both ends of control cable.

R (7) At manual control rod end of cable (below the counterbalance) turn rod end fitting onto control cable terminal until terminal threads are visible in rod end fitting inspection hole. Tighten jamnut.

R (8) Connect control cable rod end fitting to manual control crank using bolt, bearings, washers and nut.

R (9) At opposite end of control cable, install rod end fitting control cable terminal. Turn until terminal threads are visible in rod end fitting inspection hole.

R (10) Adjust rod end fitting until it can be installed without slack in control cable.

R (11) Install rod end fitting with flathead pin, bearing, washers, and cotter pin.

R (12) Remove rig pin from counterbalance brake cam yoke.

R (13) Perform uplock/downlock mechanism adjustment and test
R (Ref. 52-22-10).

R (14) Close access panels and install trim.

R (15) Remove door control tags.

R (16) Verify door operation (Ref. 52-22-00).

FLIGHT COMPARTMENT EMERGENCY HATCH - DESCRIPTION AND OPERATION

1. General

The flight compartment emergency hatch (Ref. Fig. 1) is an inward-opening, plug-type unit positioned on the left ceiling just aft of the Captains seat at zone 831.

The hatch, which is approximately 21 inches square, comprises an aluminum framework of beams and intercostals.

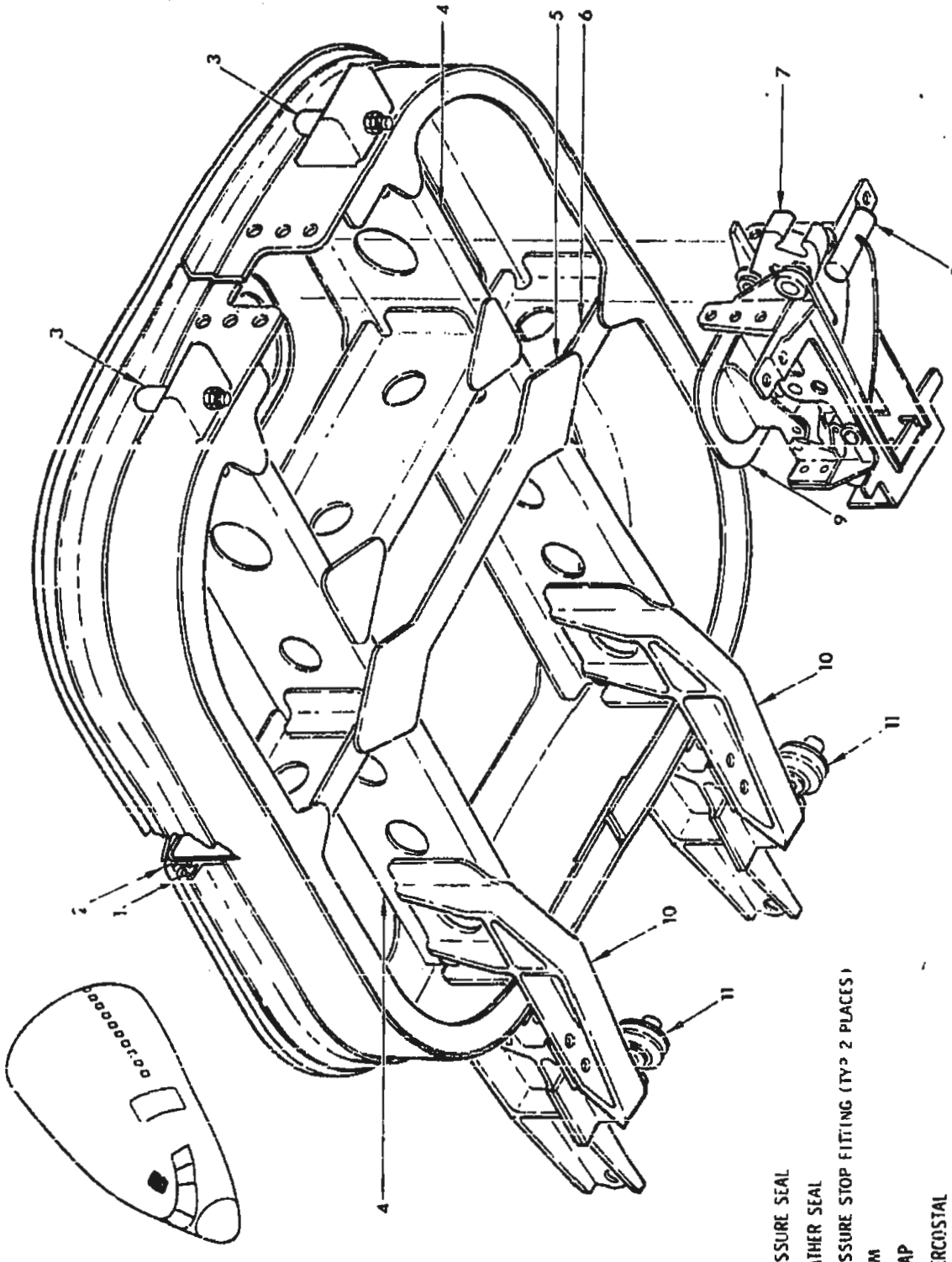
Two hinge fittings are mounted on the aft end of the structure.

The hatch is counterbalanced by two snubber assemblies that join the hatch hinge arms to the fuselage structure.

Two adjustable pressure-stop support fittings at the front of the hatch transfer the hatch air pressure loads to the fuselage.

The hatch can be opened from either inside or outside the aircraft. The single pawl latching mechanism is operated from the inside by a T-type pull handle. The hatch can be opened from outside the aircraft by a flush-plate release that is set flush with the fuselage exterior skin.

The emergency hatch is included in the door-warning circuit. A proximity switch is provided to indicate a latch-safe condition.



Flight Compartment Emergency Hatch
Figure 1

FLIGHT COMPARTMENT EMERGENCY HATCH - REMOVAL AND INSTALLATION

1. General

These procedures are for removing the flight compartment emergency hatch, zone 831, and reinstalling the same hatch.

If a hatch other than the one removed is to be installed, remove pressure pads and shims from hinges and refer to rigging adjustments (Ref. 52-23-01).

NOTE: The door warning circuit will not be deactivated while this procedure is being performed.

2. Referenced Procedures

25-13-01	Flight Compartment Trim Panels - Removal and Installation
52-23-01	Flight Compartment Emergency Hatch - Adjustment and Test
52-23-03	Hatch Pressure Seal - Removal and Installation

3. Removal/Installation

A. Removal

(1) Remove trim, zone 211, as required to gain access to hatch hinge area (Ref. 25-13-01).

(2) Pull hatch latch handle to fully unlocked position (Ref. Fig. 401).

(3) Open hatch to convenient position for access to hinges.

(4) Remove nut from each hinge and snubber bolt.

(5) Remove hinge and snubber bolt, and retain snubber spacer, springs, and cam on bolt.

(6) With the hatch properly supported, remove hinge spacer from each snubber bracket.

NOTE: The hinge spacer installed in the snubber bracket also serves as the bearing surface for the hatch hinge.

(7) Lower and stow hatch, as required, to prevent damage.

(8) Reassemble all snubber parts on snubber bracket until hatch is to be installed.

B. Installation

(1) Install hatch seals (Ref. 52-23-03) if required.

(2) Verify that pressure seal and weather seal are clean and free of grease.

(3) Remove parts which were reassembled in Step 3A(8).

(4) Raise and support hatch so that hinge hole aligns with hole in snubber bracket.

(5) Install hinge spacer in each snubber bracket through hinge.

(6) With snubber parts (snubber spacer, springs, and cam) in proper position on bolt shank and with cam tang aligned with slot in cam guide, insert bolt in snubber spacer. Prevent hinge spacer from moving outward as bolt is being installed.

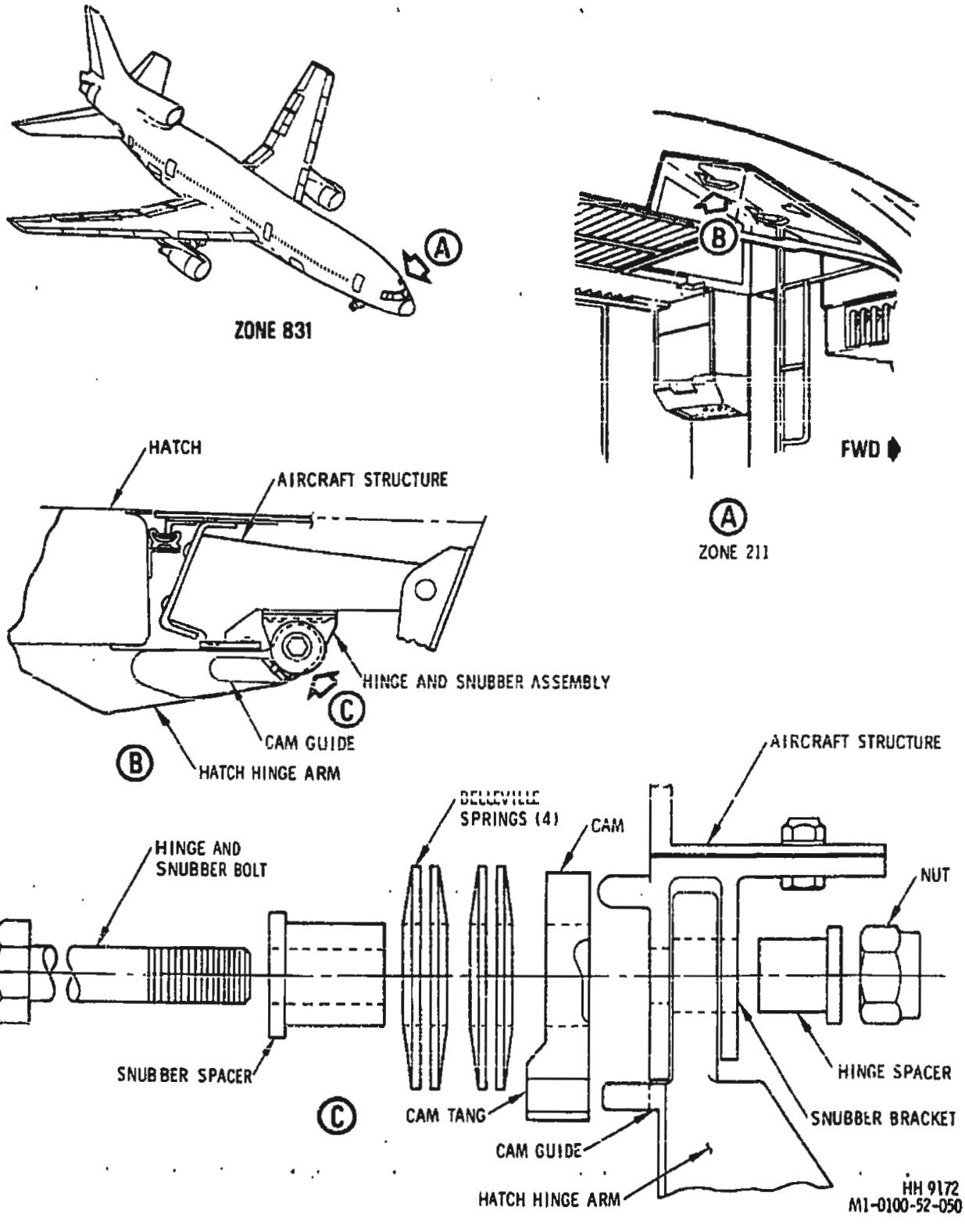
(7) Install nut on each bolt and tighten evenly to obtain a counterbalance condition with hatch opened 5 to 10 degrees.

(8) Close and lock hatch latch.

(9) Verify that door warning light is off when hatch latch is locked.

R NOTE: If door warning light does not go out when the hatch is closed and latched, reopen hatch and recycle latch by pulling handle completely back to its stop before closing hatch again. This positions the overcenter linkage so that the latch mechanism will allow the exterior handle to close properly, and lock the hatch in the full closed position to turn off the door warning light.

(10) Reinstall trim panel (25-13-01).



Flight Compartment Emergency Hatch - Removal and Installation
Figure 401

FLIGHT COMPARTMENT EMERGENCY HATCH - ADJUSTMENT AND TEST

1. General

This procedure outlines the adjustments necessary to properly position a hatch in the hatch opening, fair the hatch with the fuselage, and assure that the warning system is operable. The procedure is applicable to a presently installed hatch, or a replacement hatch, as noted.

2. Equipment and Materials

Lock-wire, Annealed, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Cotter pins, MS24665-130, or equivalent

R Emergency Hatch Latch Mechanism Check Fixture, or equivalent

R Pressure Stop Check Fixture, PN 1620345, or equivalent

3. Referenced Procedures

25-13-01	Flight Compartment Trim Panels - Removal and Installation
52-24-02	Flight Compartment Hatch Lining - Removal and Installation

4. Adjustment/Test

A. Adjustment

(1) Remove washers from under forward pressure stops (Ref. Fig. 501). Replace stops.

(2) For replacement hatch, remove aft pressure stop pads from previously installed hatch and install on hinge arms of replacement hatch. Do not install shims.

(3) Back off latch striker screws approximately 0.030 inch.

(4) Loosen snubber bracket attachment screws only enough to allow brackets to move.

(5) Check condition of pressure seal, and weather seal on hatch.

(6) For replacement hatch, disassemble snubber parts on snubber bracket (Ref. 52-23-01, Fig. 401).

(7) Support replacement hatch in position to align hole in each hinge arm with hole in each bracket.

(8) Install hinge spacer in each bracket through hinge.

(9) With snubber parts in position insert bolt through snubber spacer and hinge spacer. Prevent hinge spacer from moving outward as bolt is being installed. Install nut on each bolt, but do not tighten.

(10) Center hatch in opening and engage latch.

(11) Measure mismatch at aft edge of hatch and determine
R shims required to place aft edge of hatch 0.000 to 0.060 inch above contour.

(12) Remove hatch by removing snubber brackets.

(13) Install or remove shims under each snubber bracket as determined and recorded in Step 4A(11).

(14) Reinstall hatch, center in opening, and tighten bracket attachment screws.

(15) Measure mismatch at forward edge of hatch and determine washers required at latch striker plate to place forward edge of hatch 0.000 to 0.060 inch below contour.

(16) Install or remove washers at striker plate as determined in Step 4A(15).

(17) Measure gap between forward pressure stops and pressure
R stop support fitting. Determine and record number of
R washers required to attain 0.020 (+0.00 -0.015) inch
R clearance. Use check fixture 1620345-901 through -911 to measure clearance.

(18) Measure gap between aft pressure stop pads and hatch
R hinge support fitting. Determine and record shims required to attain 0.010 (±0.005) inch clearance.

(19) Open hatch.

(20) Install number of washers determined in Step 4A(17) at
R each forward pressure stop. Retain any washers removed
R by installing under nut.

(21) Install shims determined in Step 4A(18) under each aft pressure stop pad.

(22) Adjust snubber bolts to counterbalance hatch.

(23) Remove hatch lining (Ref. 52-24-02).

(24) Close and latch hatch.

R (25) Verify that latch assembly adjustable link and the
R proximity sensor actuator are engaged and in a
R serviceable condition. If necessary, adjust link to
R obtain dimension of 1.725 to 1.831 inch to engage with
R proximity sensor actuator (Ref. Fig. 501).

(26) Check that adjustment bolt for latch assembly forward link stops linkage movement at 0.045 (±0.015) inch above centerline position (Ref. Fig. 501). If not, adjust linkage as follows:

(a) Remove adjustment bolt lock-wire and loosen jamnut.

(b) Turn adjustment bolt CW or CCW as required to obtain 0.045 (±0.015) inch dimension.

NOTE: To facilitate latch linkage adjustment the latch mechanism check fixture described in Step (27) may be used.

(c) Tighten adjustment bolt jam nut and lock-wire.

(27) The latch mechanism check fixture can be used to check for correct linkage bolt overcenter position as follows (Ref. Fig. 502):

(a) Remove cotter pins from nuts of three center link bolts. Do not loosen nuts.

(b) With latch handle in locked position (door open or closed) slip check fixture over protruding thread of above three bolts. Check that three bolts engage check fixture holes.

(c) If bolts are misaligned with check fixture adjust linkage [Ref. Step (26)].

(d) Check for a clearance of 0.030 inch minimum between the overcenter link and the external handle striker. Trim striker if required for clearance.

(e) Check emergency hatch exterior handle opening force to be 8 to 25 pounds.

(f) Install three new cotter pins [Ref. Step (a)].

(28) Adjust gap between proximity sensor and target to 0.200 to 0.220 inch.

(29) Verify that contour mismatch is within 0.000 to 0.060 inch below contour at forward edge of door and 0.000 to 0.060 inch above contour at aft edge of door.

(30) Open hatch and verify that snubber detent holds hatch in full open position.

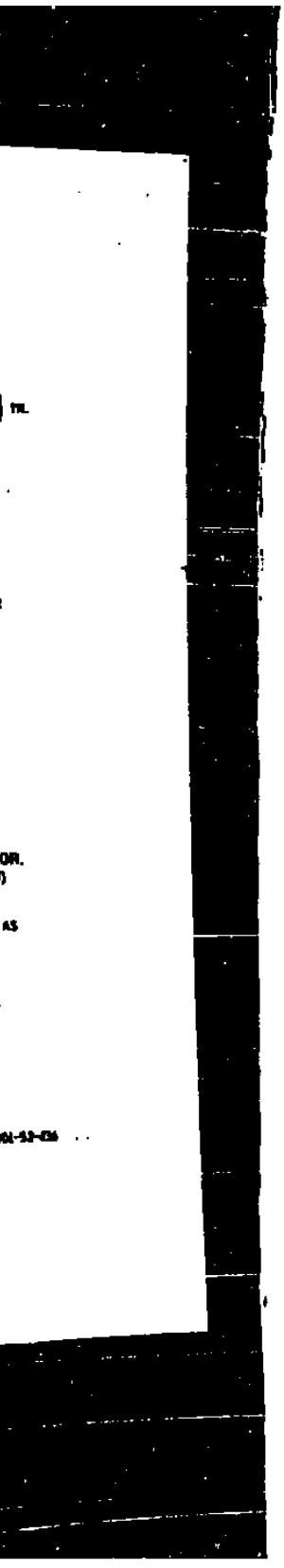
(31) Verify operation of door warning light. When hatch is unlatched ESCAPE HATCH light on Flight Engineer/Second Officers annunciator panel is on. When hatch is closed and latched, light is off.

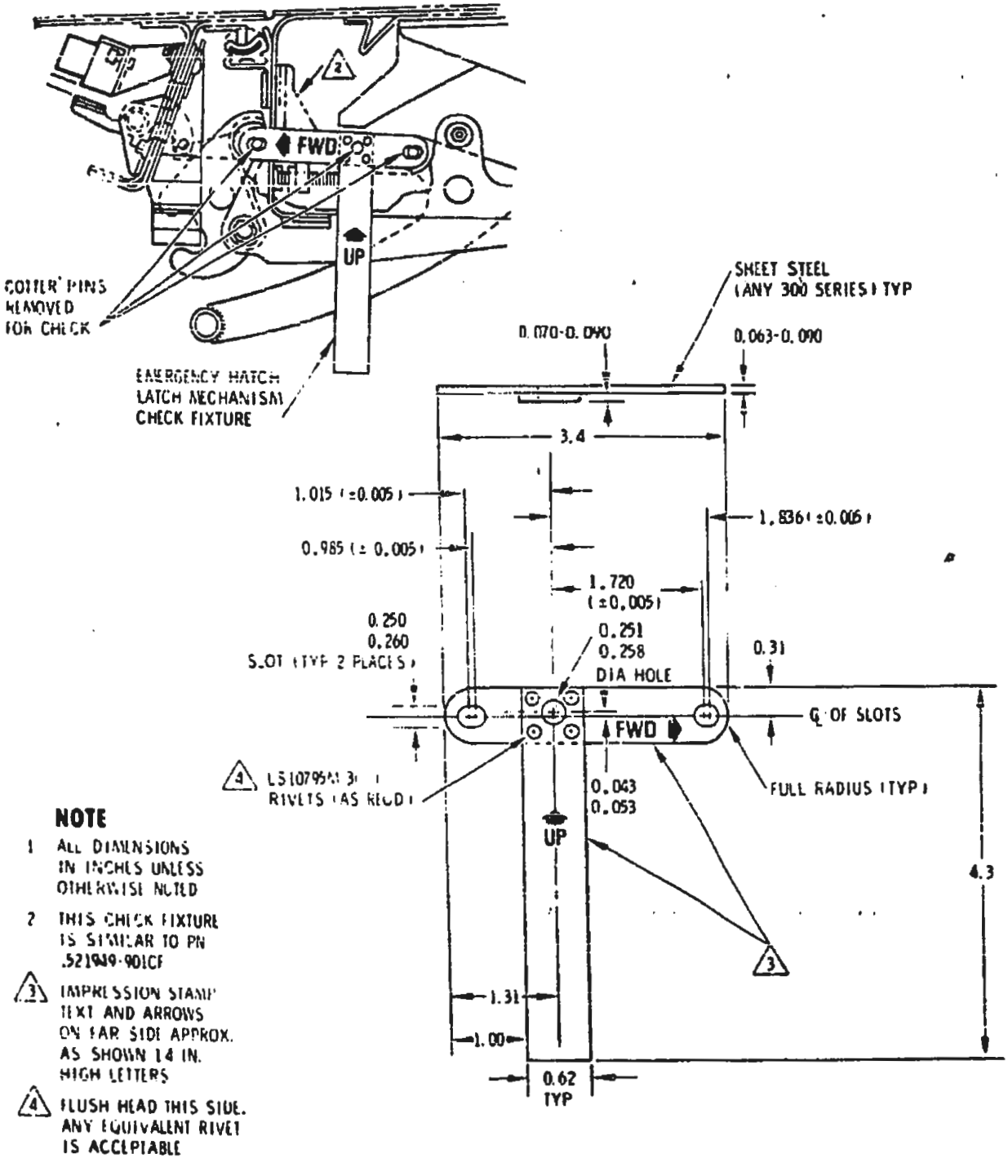
R R R R R

NOTE: If door warning light does not function correctly, re-open hatch and re-cycle latch by pulling interior handle fully back to stop. If warning still persists, check that the torsion spring is intact and lifts the linkage overcentre when the latch is locked.

(32) Install hatch lining (Ref. 52-24-02).

(33) Close and latch hatch.



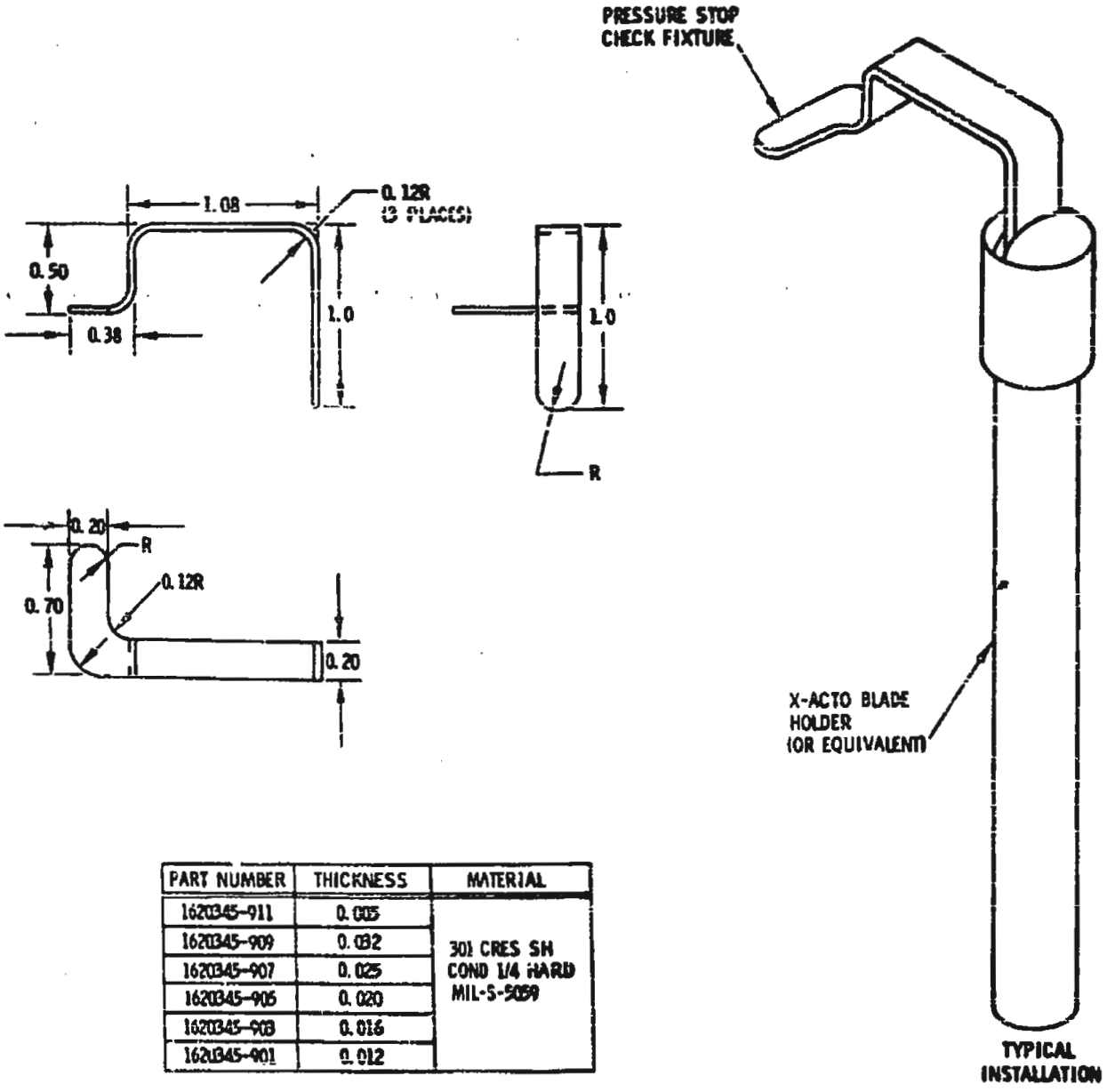


NOTE

1. ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED
2. THIS CHECK FIXTURE IS SIMILAR TO PN .521939-901CF
3. IMPRESSION STAMP TEXT AND ARROWS ON FAR SIDE APPROX. AS SHOWN 14 IN. HIGH LETTERS
4. FLUSH HEAD THIS SIDE. ANY EQUIVALENT RIVET IS ACCEPTABLE

M1-0101-52-409

Emergency Hatch Latch Mechanism Check Fixture
Figure 502



PART NUMBER	THICKNESS	MATERIAL
1620345-911	0.035	301 CRES SH COND 1/4 HARD MIL-S-5059
1620345-909	0.032	
1620345-907	0.025	
1620345-905	0.020	
1620345-903	0.016	
1620345-901	0.012	

NOTE

1. ALL DIMENSIONS ARE IN INCHES.

M1-0100-52-459

R
R

Pressure Stop Check Fixture
Figure 503

R EFFECTIVITY: ALL
R
0018

R FLIGHT COMPARTMENT EMERGENCY HATCH LATCH ASSEMBLY - REMOVAL AND INSTALLATION

1. Referenced Procedure

52-24-02 Flight Compartment Hatch Lining - Removal and Installation

2. Removal/Installation

A. Removal

(1) Unlatch and open hatch.

(2) Remove hatch lining for access to latch (Ref. 52-24-02).

(3) With latch supported, remove screws attaching latch to door skin, frame, and intercostal.

(4) Remove latch.

B. Installation

(1) Support latch in position in hatch.

(2) Install screws in skin, frame, and intercostal.

(3) Verify latch operation.

(4) With electrical power on, verify that hatch warning light is off when hatch assembly is closed and latched.

(5) Install hatch lining (Ref. 52-24-02).

(6) Close and latch hatch.

HATCH PRESSURE SEAL - REMOVAL AND INSTALLATION

1. Equipment and Materials

Cement LCM 30-2085 Type I, Products Research Co. (PR 7301K1, 1 pt.), or equivalent

Pry Bar

NOTE: Pry bar must be made of wood or plastic and should have a tapered, wedge-shaped end with blunt edges. Do not use any metal tools for seal removal.

2. Removal/Installation

A. Removal

(1) Using care to prevent damage to seal retainer, pry up a section of seal with pry bar.

(2) Remove remainder of seal from retainer by hand.

B. Installation

(1) Apply cement LCM 30-2085 Type I to inner side of pressure seal retainer (Ref. Fig. 401).

R (2) Insert outer edge of seal by hand, starting at one side
R and working around door. Ensure bleed holes face toward flight deck.

(3) Using fingers, press seal firmly into place.

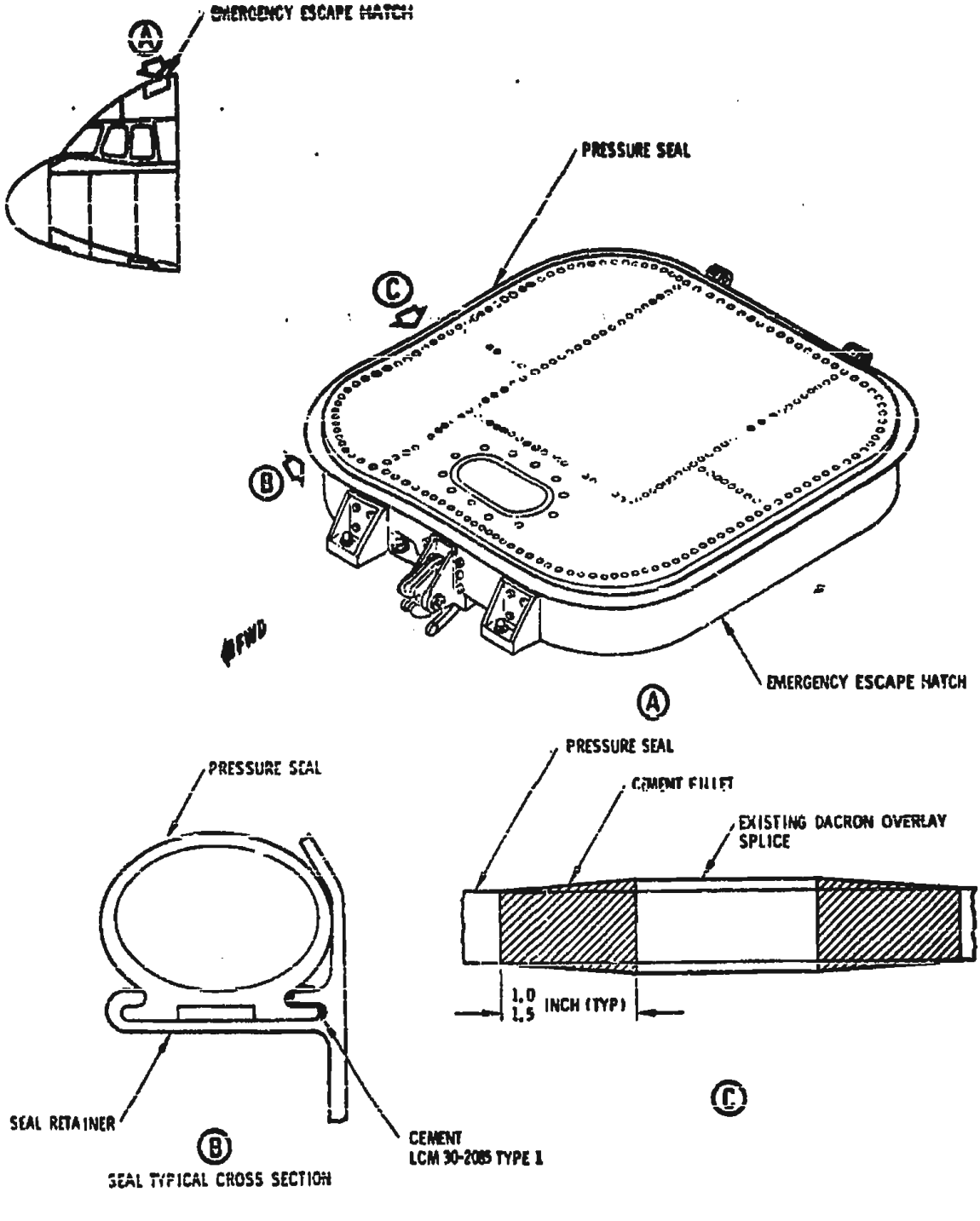
(4) Close and latch hatch.

(5) Verify that hatch assembly operates normally.

(6) Close hatch and water soak to ensure that hatch is free of leaks.

NOTE: If water leak appears in area of seal splice, check for smooth transition of fillet from dacron overlay splice. If necessary, apply cement as shown in Fig. 401.

(7) Verify that hatch warning light is off, when hatch is closed and latched.



M1-0800-52-134

R Hatch Pressure Seal - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL
R
0016

EMERGENCY DOOR LINING - REMOVAL AND INSTALLATION

1. General

R A decorative door lining is mounted on the inboard side of L4
R and R4 emergency exit doors at zones 835 and 845. The removal and installation procedures for the two door linings are the same.

2. Referenced Procedures

25-61-04 Double Slide Door-mounted Container - Removal and Installation

52-22-00 Door Actuation System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Open door approximately 3 inches (Ref. 52-22-00).

(2) Remove slide container from inboard side of door (Ref. 25-61-04).

(3) Remove trim strips from lining panel joints.

(4) Remove screws holding center panel and lift panel inboard.

(5) Remove nuts from accessible side of rubber isolators on top support brackets and side panel support brackets.

(6) Move panels to slide brackets off studs and lift inboard away from door.

B. Installation

(1) Support door lining in position against door.

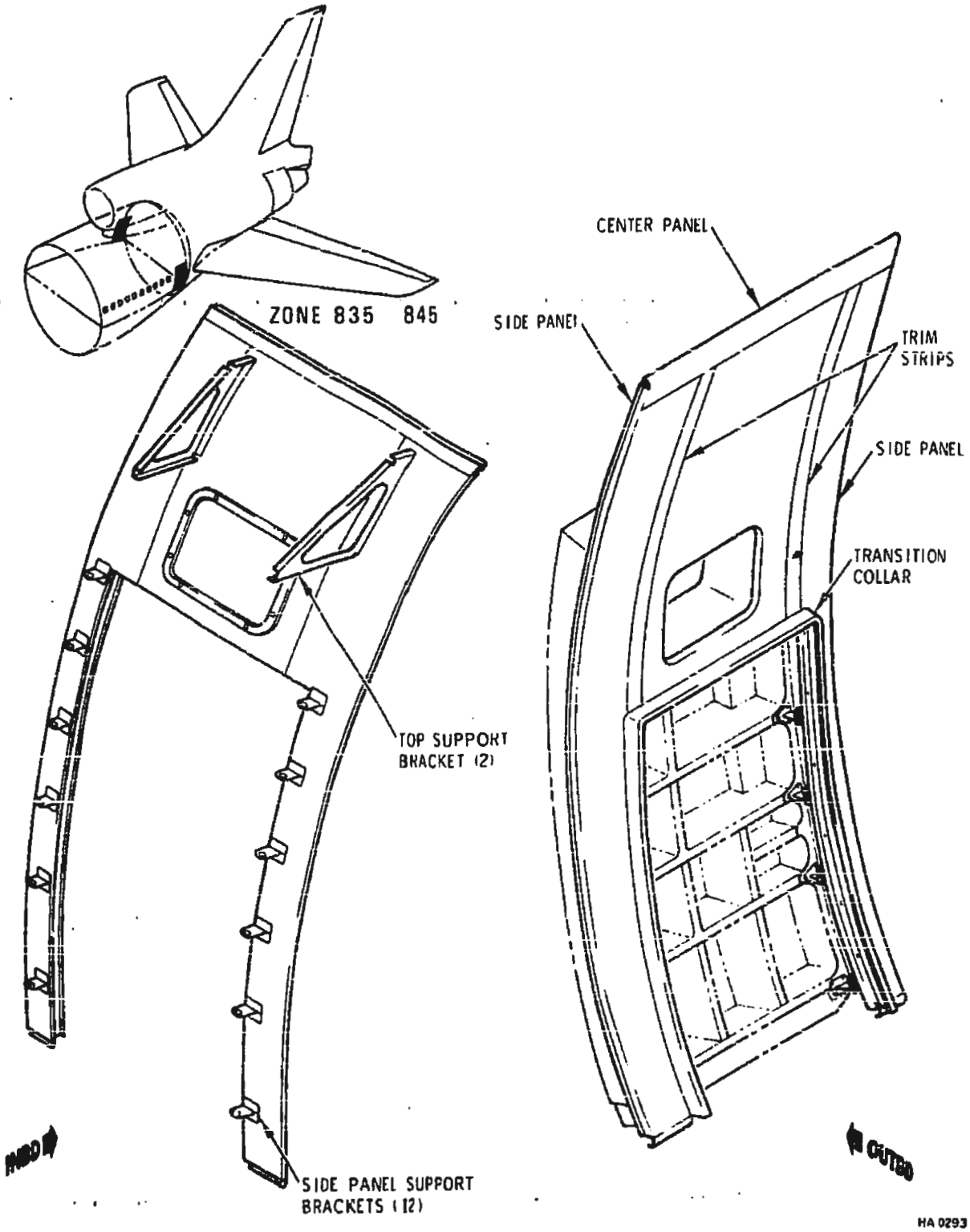
(2) Install nuts on upper studs of isolators at side trim support brackets.

(3) Install nuts on upper studs of isolators at top trim support brackets.

(4) Operate door (Ref. 52-22-00) to verify clearance with surrounding trim.

R (5) With door open approximately 3 inches, install slide
R container (Ref. 25-61-04).

R (6) Close door.



HA 0293
M1-0100-52-071

R Door Lining - Removal and Installation
R Figure 401

R FLIGHT COMPARTMENT HATCH LINING - REMOVAL AND INSTALLATION

R 1. Removal/Installation

R A. Removal

R (1) Unlatch and open hatch for access to screws.

R (2) With lining supported, remove attaching screws.

R (3) Remove lining and stow in protected area.

R B. Installation

R (1) Support lining in place and install screws.

R (2) Close and latch hatch.

R (3) Verify that door warning light is off.

CARGO DOORS - DESCRIPTION AND OPERATION

R 1. General

The cargo doors are all located on the lower right side of the fuselage. Location, size, and zone references are as described in Figure 1 (Sheet 1).

The C-1 cargo door is located in a constant diameter section of fuselage. The C-2 and C-3 cargo doors are on the aft fuselage taper and are contoured accordingly.

The doors are identical in principle of operation, though minor differences occur due to fuselage contour, location and door size.

Only the C-2 door will be described as noted.

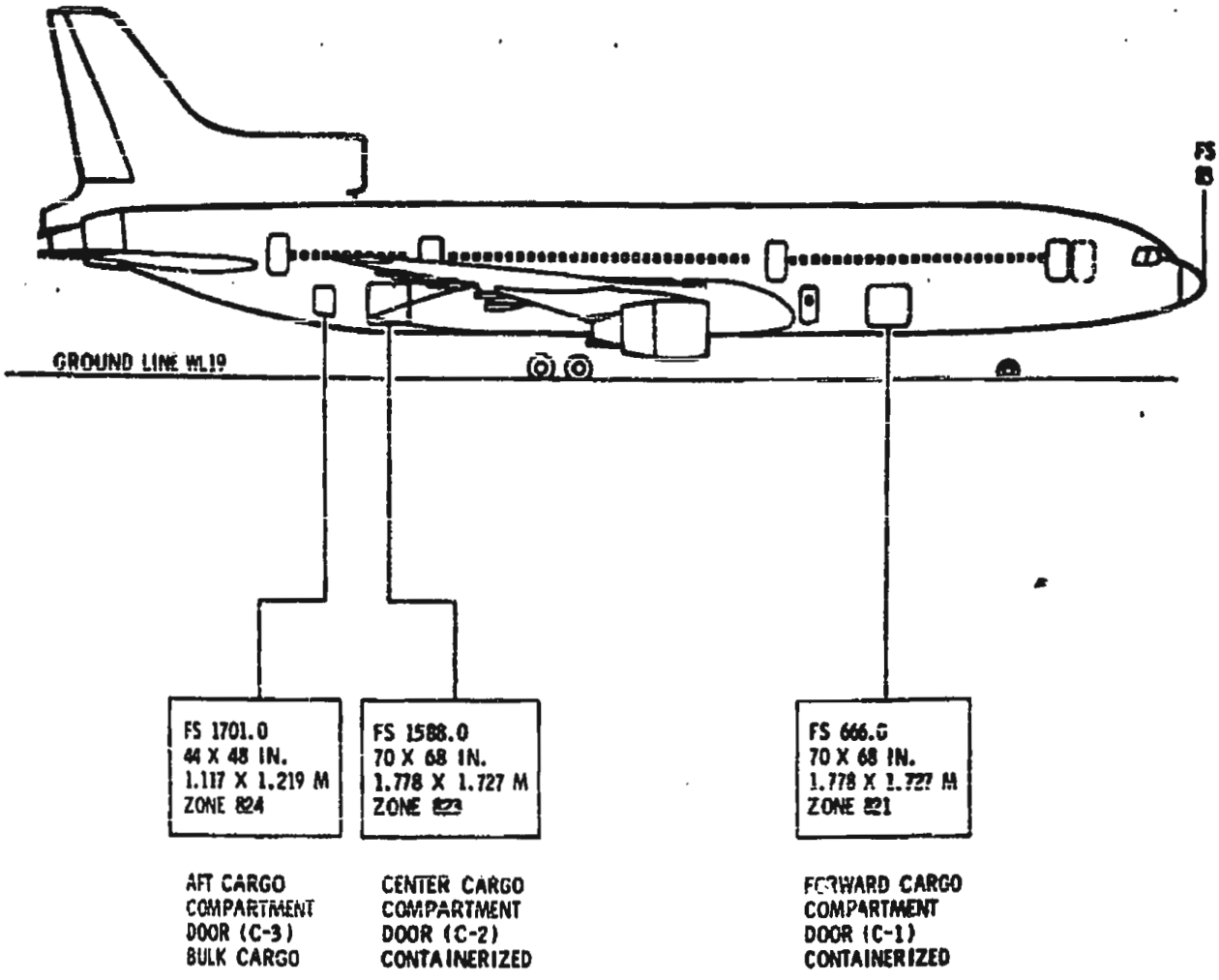
The door is of the semi-plug type, outward opening and constructed of horizontal I-beams and vertical formers supporting the external aluminum alloy pressure skin (Ref. Fig. 1, Sheet 2).

The C-2 door supports a segment of the main landing gear fairing which extends over it. The fairing is supported by a series of ribs fastened to the door. Access to some cargo door components is provided by hinged doors with quick-release latches.

The cargo door and door actuation mechanism is designed to withstand wind gust loads of 60 mph (97 kph) during operation and while in the open position, though the doors may temporarily stall with directly applied gust loads at 40 mph (64 kph).

The upper inside face of the door is enclosed by thermally insulating vinyl faced material attached by press fasteners and Velcro tape. The lower inside face of each door is covered by plastic laminated trim panels attached by screws.

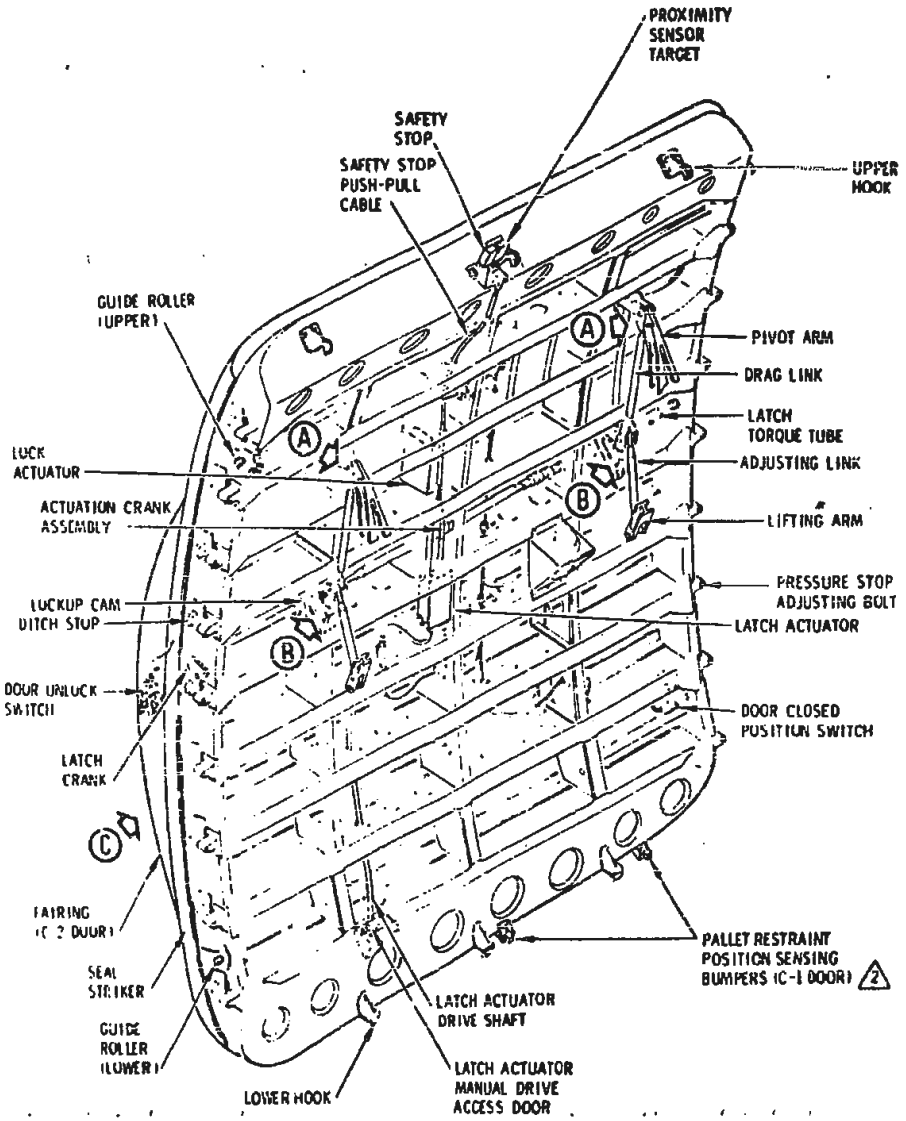
Adjustable pressure stops are located on the fore and aft side of the door, and hooks are located at the top and bottom members. These stops and hooks, serve to transfer pressure loads to the fuselage when the door is at the fully closed position. At each pressure stop location is a ditch stop to prevent door inward movement should an external force be applied. Upper and lower guide rollers are mounted in the fore and aft sides of the door engaging in roller guides on the door surround structure when the door approaches the closed position. Side rollers are mounted at the upper cam follower roller positions for longitudinal guidance.

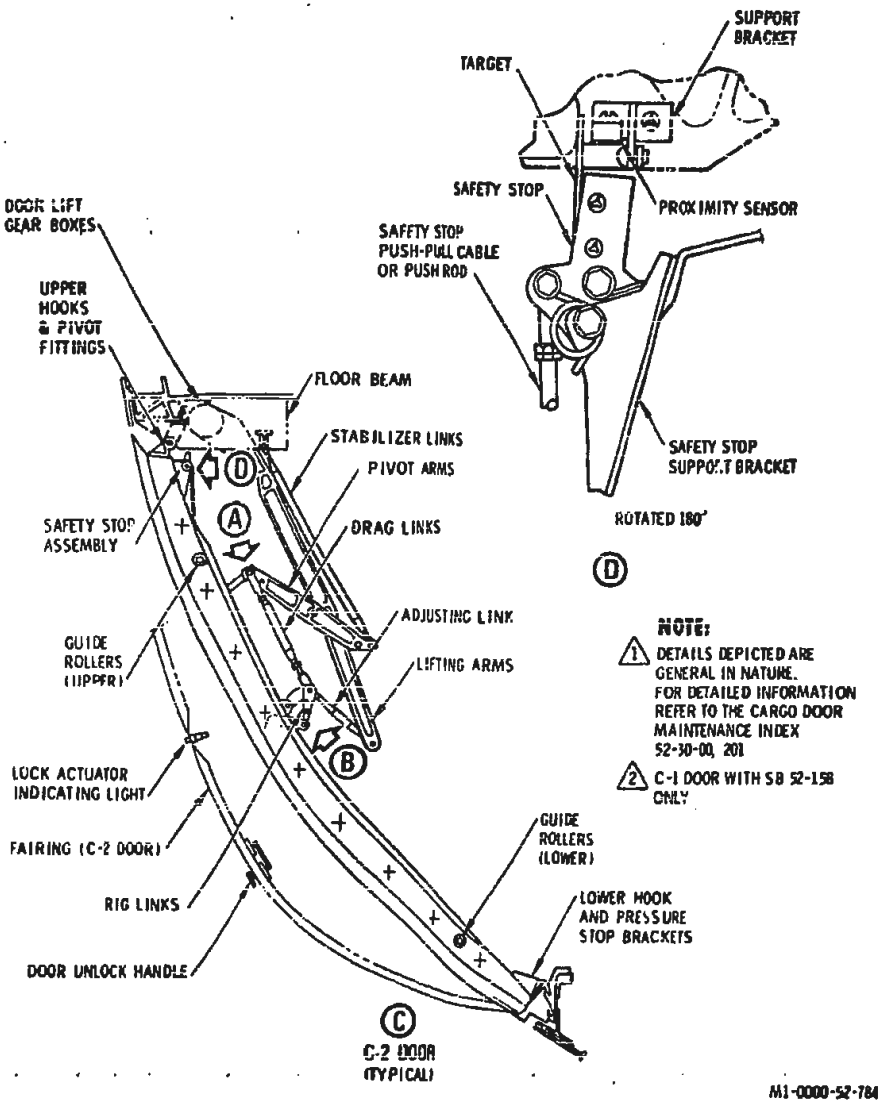


M1-0000-52-521

R Cargo Door Description
R Figure 1 (Sheet 1)

R EFFECTIVITY: ALL
R
001B





NOTE:

1. DETAILS DEPICTED ARE GENERAL IN NATURE. FOR DETAILED INFORMATION REFER TO THE CARGO DOOR MAINTENANCE INDEX 52-30-00, 201
2. C-1 DOOR WITH SB 52-158 ONLY

M1-0000-52-784

Cargo Door Description
Figure 1 (Sheet 2)

EFFECTIVITY: ALL

A lift actuator, located in the cargo compartment ceiling (Ref. Fig. 1, Sheet 3), is used to drive two gearboxes, operating as powered hinges, which connect through lifting arm mechanisms to two upper and lower pivot links on the inner face of the door, to operate the door between the full open and closed positions.

Three threshold guide - restraint fittings are installed in the lower sill area of the C-1 and C-2 doors (Ref. 25-52-08). These fittings are normally sequenced automatically to the proper
R restraining position (up) prior to cargo door closure. If
R restraint fittings are inadvertently left in the unrestraining mode (down), an interference is created at the forward restraint fitting which prevents door closure.

On aircraft with SB52-158,
bumper pads are also installed on the bottom of C-1 cargo door which react with the mid and aft position cargo restraint fittings to prevent door closure unless those fittings are in their proper restraining position (up).

At the closed position the door is moved vertically downward by a latch actuator to align the pressure stops and ditch stops with pressure stop pads on the door surround and to engage the upper and lower hooks, thus creating a full plug effect.

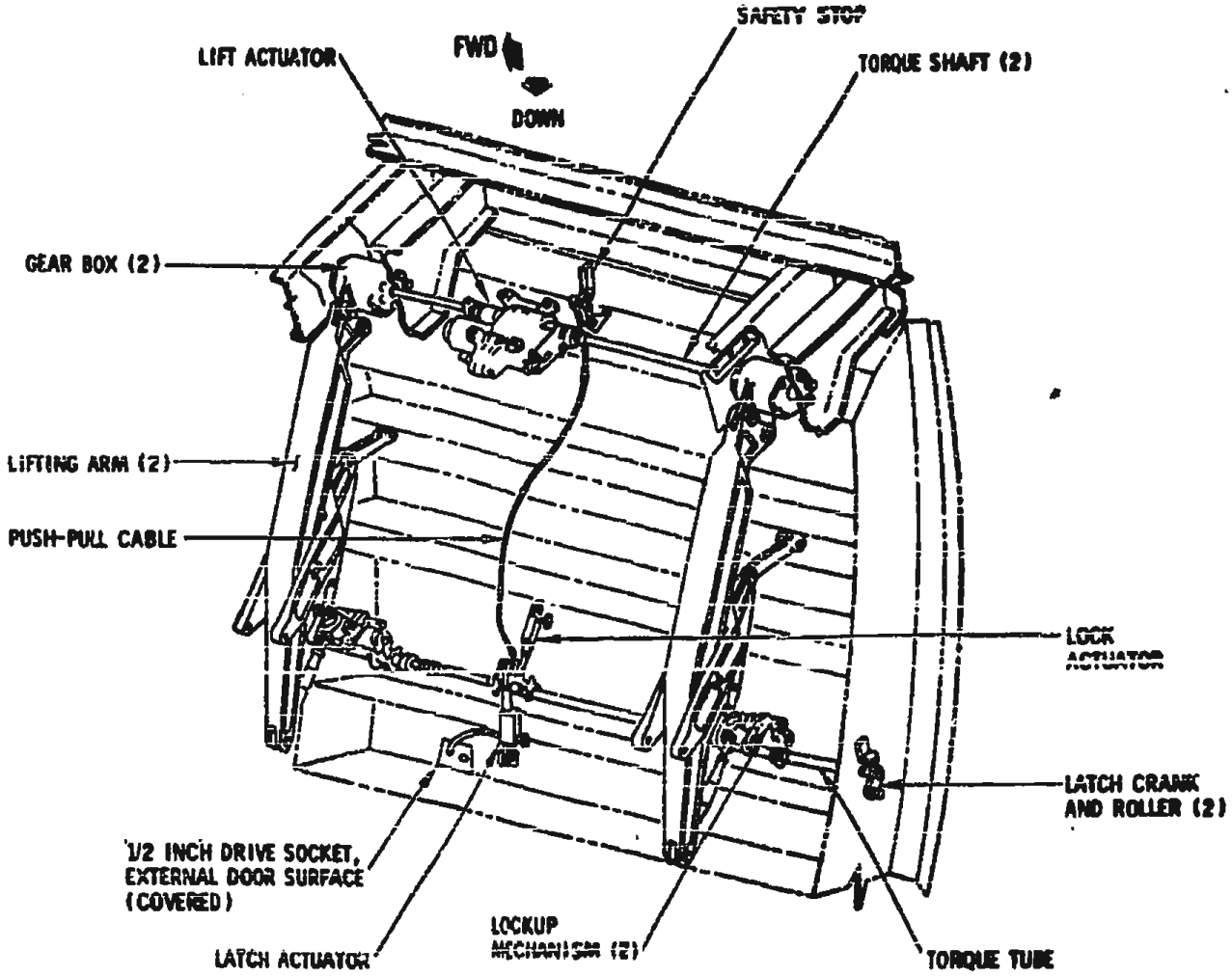
This is achieved by automatically sequencing the latch actuator, through a door closed limit switch at the lower aft corner of the door, to rotate a torque tube which extends the length of the door. Latch cranks at each end of the torque tube engage in center lifting cams on the door surround, and when rotated, lower the door to the plug position.

The door is positively retained in the closed and latched position by a lock actuator, which engages a lever locking latch to prevent rotation of the latch torque tube.

On aircraft without SB52-122,
the actuator also operates a flexible cable to extend a safety stop at the top edge of the door into proximity with a stop face in the fuselage structure.

On aircraft with SB52-122,
a pushrod is used to perform this function. This physically prevents upward movement of the door from behind the pressure stops. On the safety stop is a proximity switch target which operates a proximity switch sensor located above the door, for flight station operation of cargo door warning lights.

A cargo area floodlight is mounted on the inner face of the door.



M1-0100-52-349

R
R Cargo Door Description
Figure 1 (Sheet 3)

R EFFECTIVITY: ALL
R
001B

Mounted externally on the cargo door is a lock actuator indicator (green) light and a door unlock handle. The C-2 door light and unlock handle is located on the forward end of the fairing.

Normal door opening and closing operation is initiated by electrical switches actuated by paddle-type doors flush mounted on the door actuation switch box (Ref. Fig. 1, Sheet 4). When manually depressed, the paddle doors actuate spring-loaded toggle switches. In some aircraft the door provides access to a three-position toggle switch to control door opening and closing.

Provision is made for manual operation of the lock, latch and lift actuators from outside, and for manual unlocking and unlatching from inside the cargo compartment. An internal switch located in the cargo compartment ceiling, may be used to electrically open the door after it has been manually unlocked.

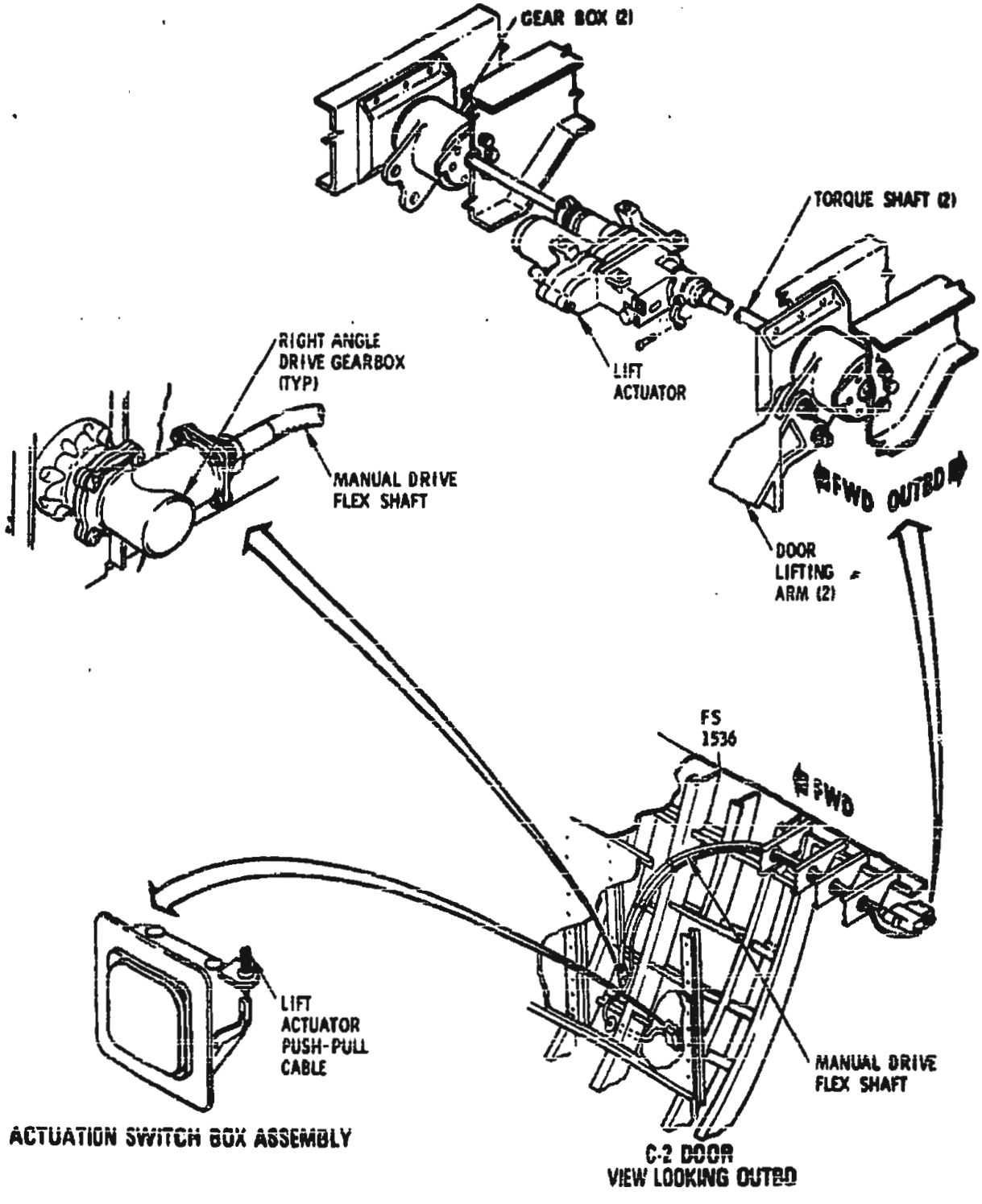
A silicone rubber pressure seal is attached to the door-surround structure by a seal retainer. The seal has a Dacron tricot cover for wear resistance.

2. Lifting Mechanism

Integral with each lift gearbox is a lug to which is bolted a lifting arm (Ref. Fig. 2). Carried on the lifting arm is a pivot arm, the outboard end of which is connected to the upper pivot link on the door. The inboard end of the pivot arm is connected by stabilizer rods to the compartment ceiling structure at a hinge center displaced from the lifting arm hinge center, which provides a paralleled lever effect during door operation. The lower extreme of the lifting arm is connected by an adjusting link rod to the lower pivot link on the door, and the two pivot links (upper and lower) are connected and synchronized by drag link rods.

During the door latching and unlatching functions, the whole door is moved in the vertical plane by operation of the latch crank, without displacement of the lifting mechanism. When the latch torque tube is in the door raised position, lock-up cams on the torque tube retain the door in that position, to maintain alignment of the cam follower rollers for the next close cycle. Operation of the lifting mechanism moves the door in an arc toward the open, or closed, position, with normal range of movement controlled by the open limit switch in the lift actuator, and the door closed limit switch in the lower aft corner of the door.

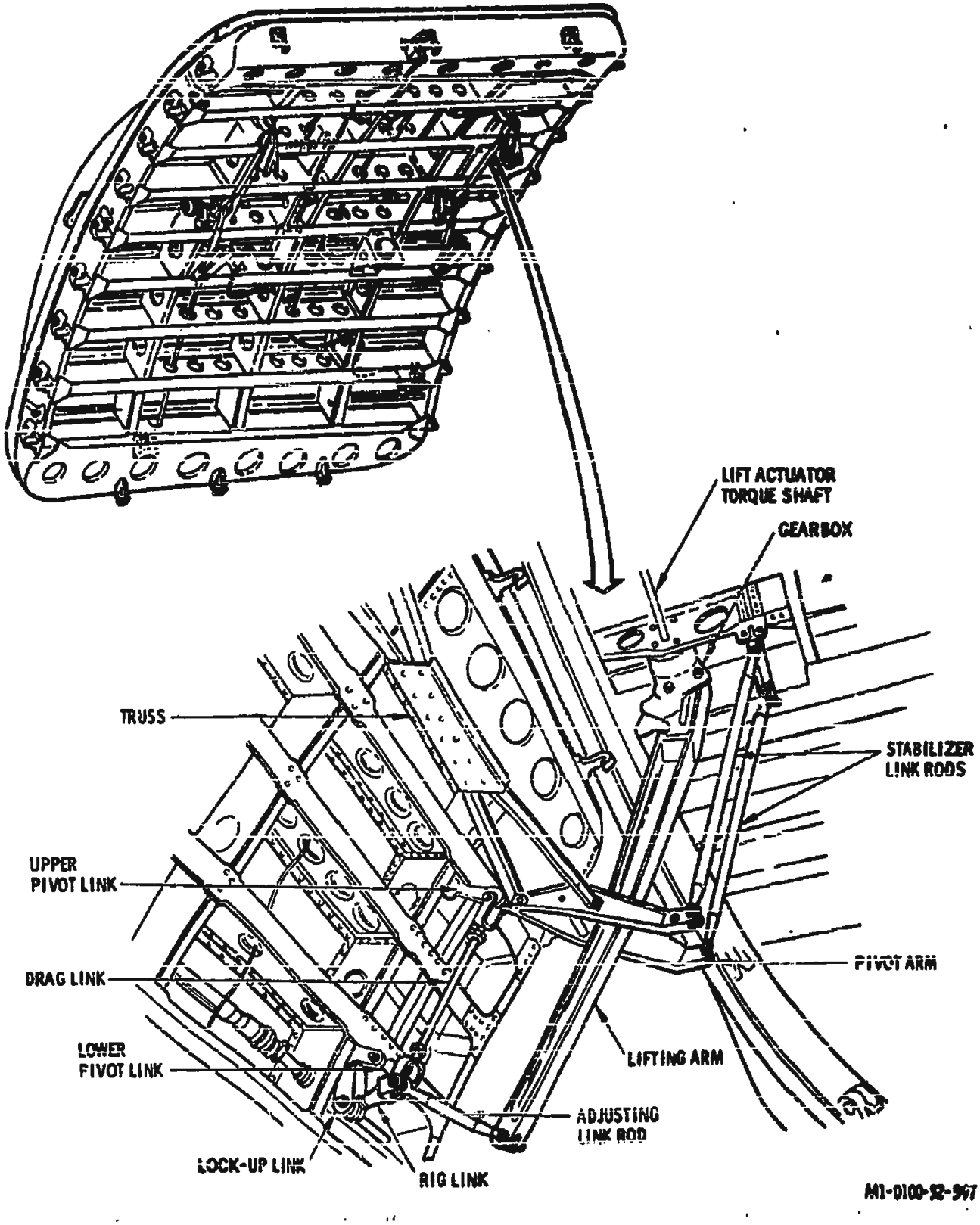
Adjustment of the drag link (Ref. Fig. 3) raises or lowers the door when in its closed position. Adjustment of the adjusting



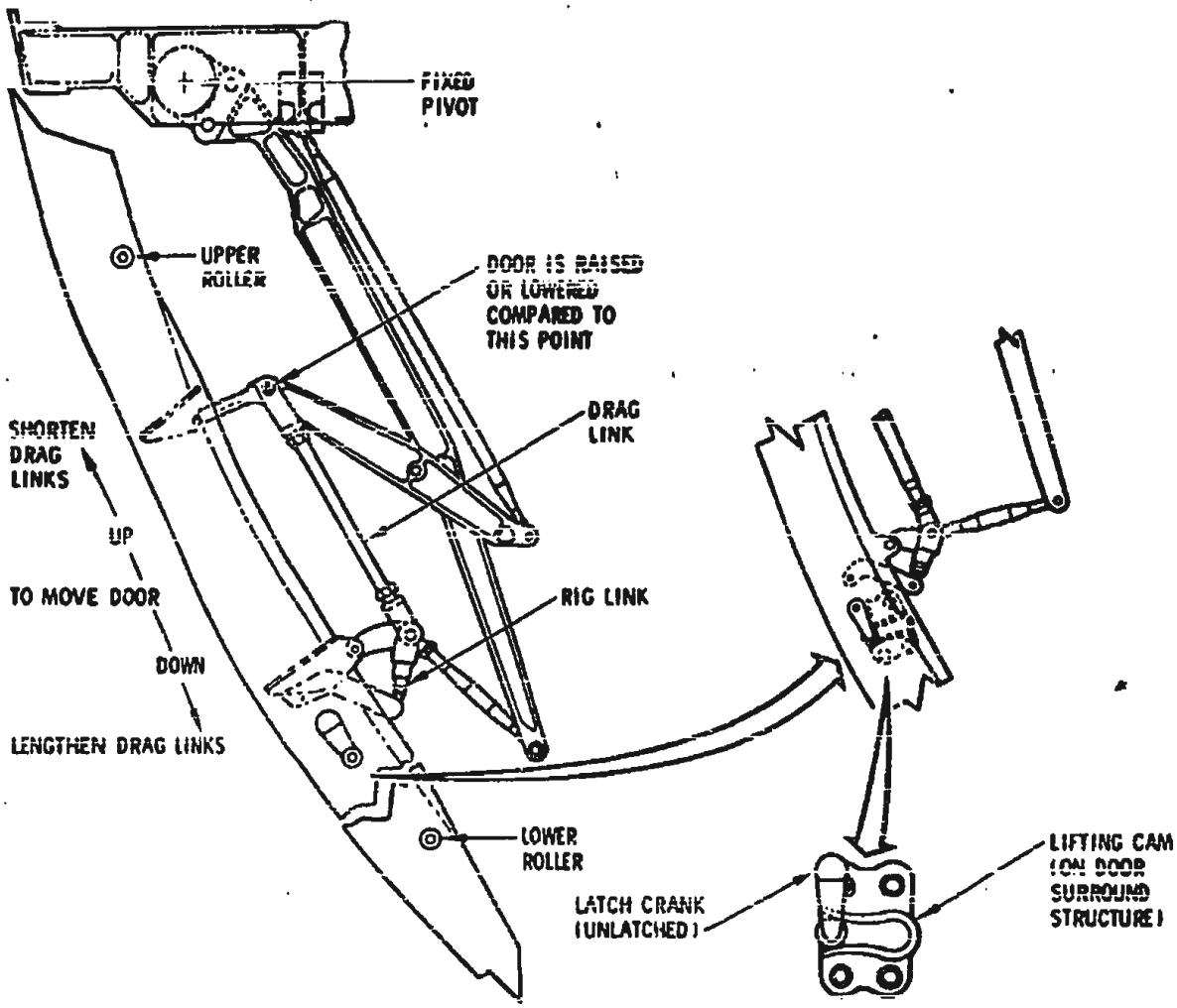
M1-0100-52-590

Cargo Door Description
Figure 1 (Sheet 4)

link (Ref. Fig. 4) swings the door around the pivot arm to move the lower edge of the door in or out for correct entry of the guide rollers into the roller guides.



Door Lifting Mechanism
Figure 2



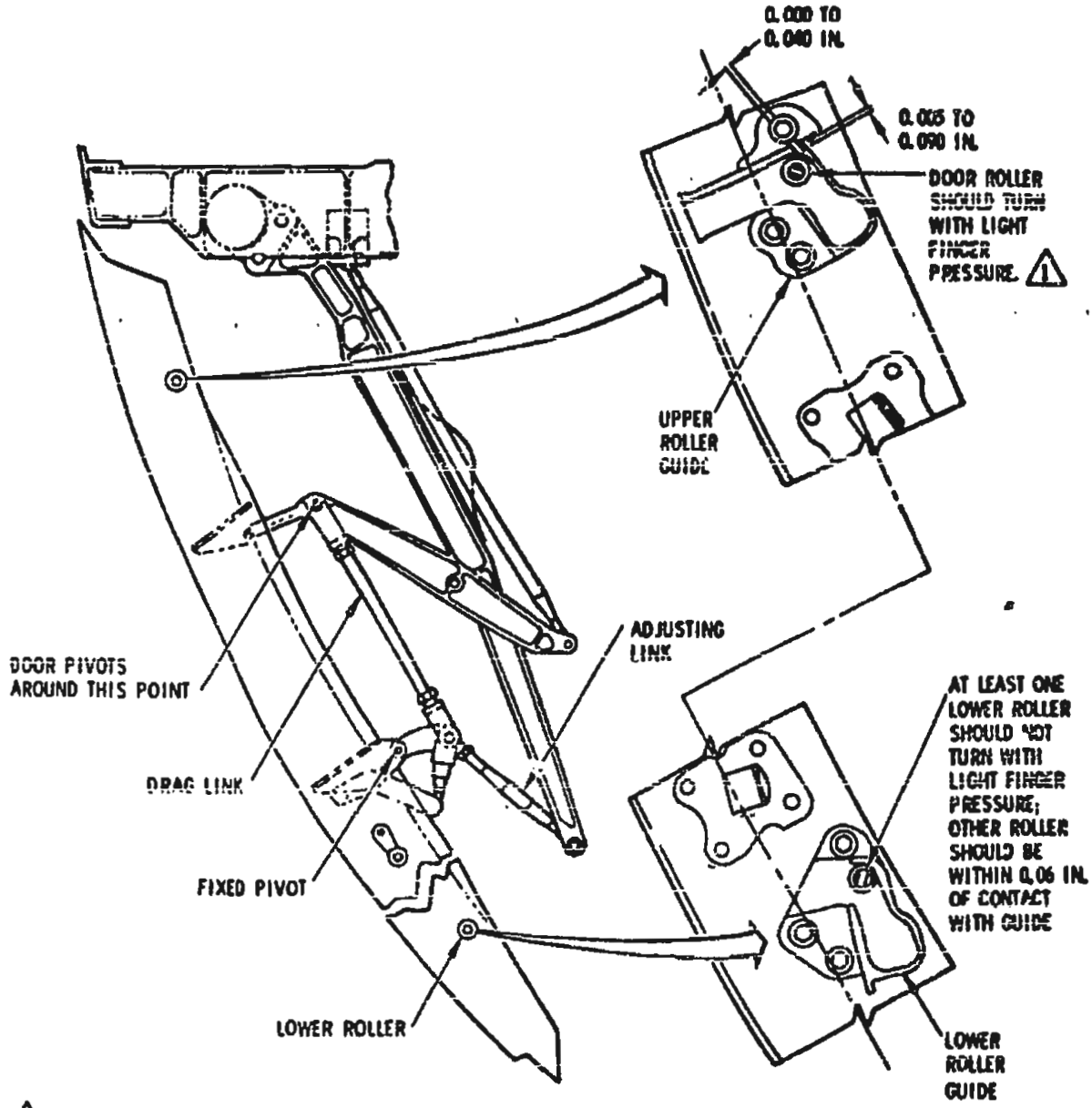
NOTE

1. MOVEMENT RELATIVE TO ROLLER GUIDE FITTINGS ON DOOR SURROUND STRUCTURE
2. THERE IS A REACTION BETWEEN DRAG LINK RODS AND ADJUSTING LINK RODS. IF ONE IS ADJUSTED, RECHECK AND ADJUST THE OTHER AS REQUIRED.
3. THIS ADJUSTMENT MAY BE USED WHEN ONE OR MORE OF THE FOLLOWING CONDITIONS IS ENCOUNTERED:
   A. DRAG LINKS ADJUSTED TO LIMIT
   B. TO RAISE OR LOWER DOOR 0.05 INCH OR LESS FOR CLEAN ENTRY INTO ROLLER GUIDES WHEN DOOR TILT ANGLE (ADJUSTING LINK ROD) IS CORRECT AND DRAG LINK RODS ARE LOCK-WIRED

DOOR ADJUSTMENT COMPONENT	SHORTEN	LENGTHEN	EFFECT ON DOOR
DRAG LINK ROD(S)	X		RAISES DOOR (ROLLERS) 1 2
		X	LOWERS DOOR (ROLLERS) 1 2
DOOR RIG LINK(S)	X		RAISES DOOR (ROLLERS) 1 3
		X	LOWERS DOOR (ROLLERS) 1 3

M1-0101-52-457

Drag Link Adjustments
Figure 3



1 DOOR ROLLERS SHOWN IN CLOSED, UNLATCHED POSITION

2 THERE IS A REACTION BETWEEN DRAG LINK RODS AND ADJUSTING LINK RODS. IF ONE IS ADJUSTED, RECHECK AND ADJUST THE OTHER AS REQUIRED.

DOOR ADJUSTMENT COMPONENT	SHORTEN	LENGTHEN	EFFECT ON DOOR
ADJUSTING LINK ROD(S)	X		MOVES TOP OF DOOR OUTBOARD 2
		X	MOVES TOP OF DOOR INBOARD 2

A41-0101-52-458

Adjusting Link Adjustments
Figure 4

3. Door Latching

When closing the door, the lift actuator moves the door until the guide rollers enter the upper and lower guides and the latch crank rollers are aligned for entry to the center lifting cams (Ref. Fig. 5).

At this position the door closed limit switch operates to remove power from the lift actuator and energize the latch actuator, which rotates the latch cranks and lowers the door, guided by the guide rollers, until the pressure stop pads are sandwiched between the pressure and ditch stops on the door (Ref. Fig. 6). During this door movement, the upper hooks engage on eccentric pins at the upper hook fittings, and the lower hooks engage in recesses in the lower hook fittings on the door sill.

When selecting the door open, rotation of the latch crank in the center lifting cam raises the door, and the sequence reverses.

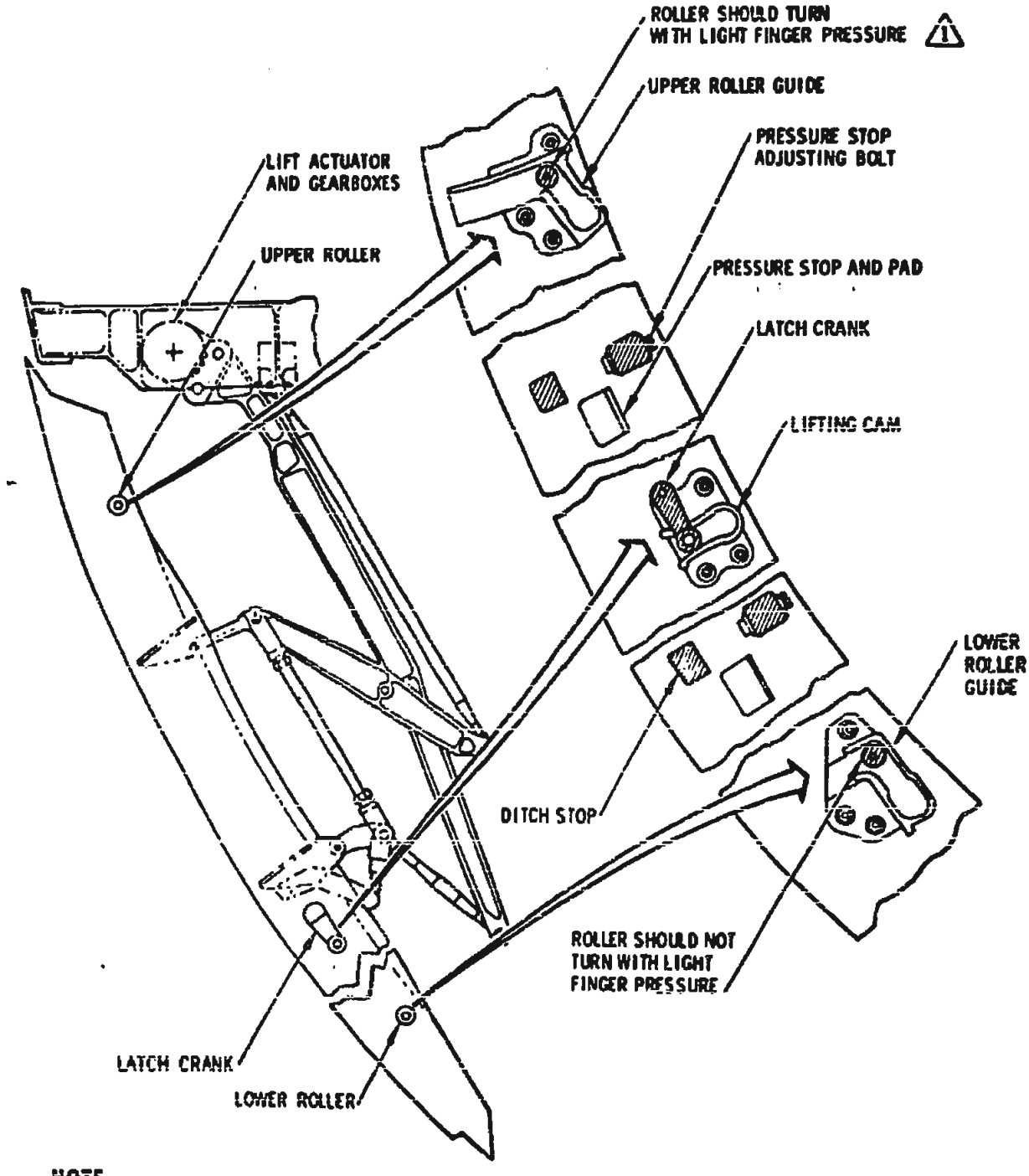
The upper and lower guides, and the center lifting cams are all adjustable on bidirectional serrated plates. The door is rigged so that the lower guide rollers contact the inboard face of their guides while there is still clearance at the top guides to assure proper operation of the door close limit switch. Pressure stop clearance is established by adjustable stop bolts.

Door-to-fuselage contour is established by adjustment of the pressure stops and the upper and lower roller guides. Door vertical position, when closed, is adjusted on the center lifting cams and the upper and lower roller guides.

NOTE: Upper and lower hook clearance must be maintained during opening and closing cycles.

4. Lock-up Mechanism

Connection of the lift mechanism to the door is by upper and lower pivot links at the door brackets, and, in parallel with each lower pivot link, a rig link and lock-up link (Ref. Fig. 7). This allows vertical movement of the door independently of the lift mechanism. The vertical movement, in and out of the plug position, is controlled by the latch actuator which rotates the torque tubes and the latch cranks in the center lifting cams to raise the door; but also on the latch torque tubes are two lock-up cams which operate on a roller on the lock-up link. The action of the cam and roller is to lock the torque tube to maintain the door in the raised position when the door latch cranks are out of engagement with their center lifting cams. Maximum raised position of the door is limited by a stop bolt which contacts the lock-up link roller.

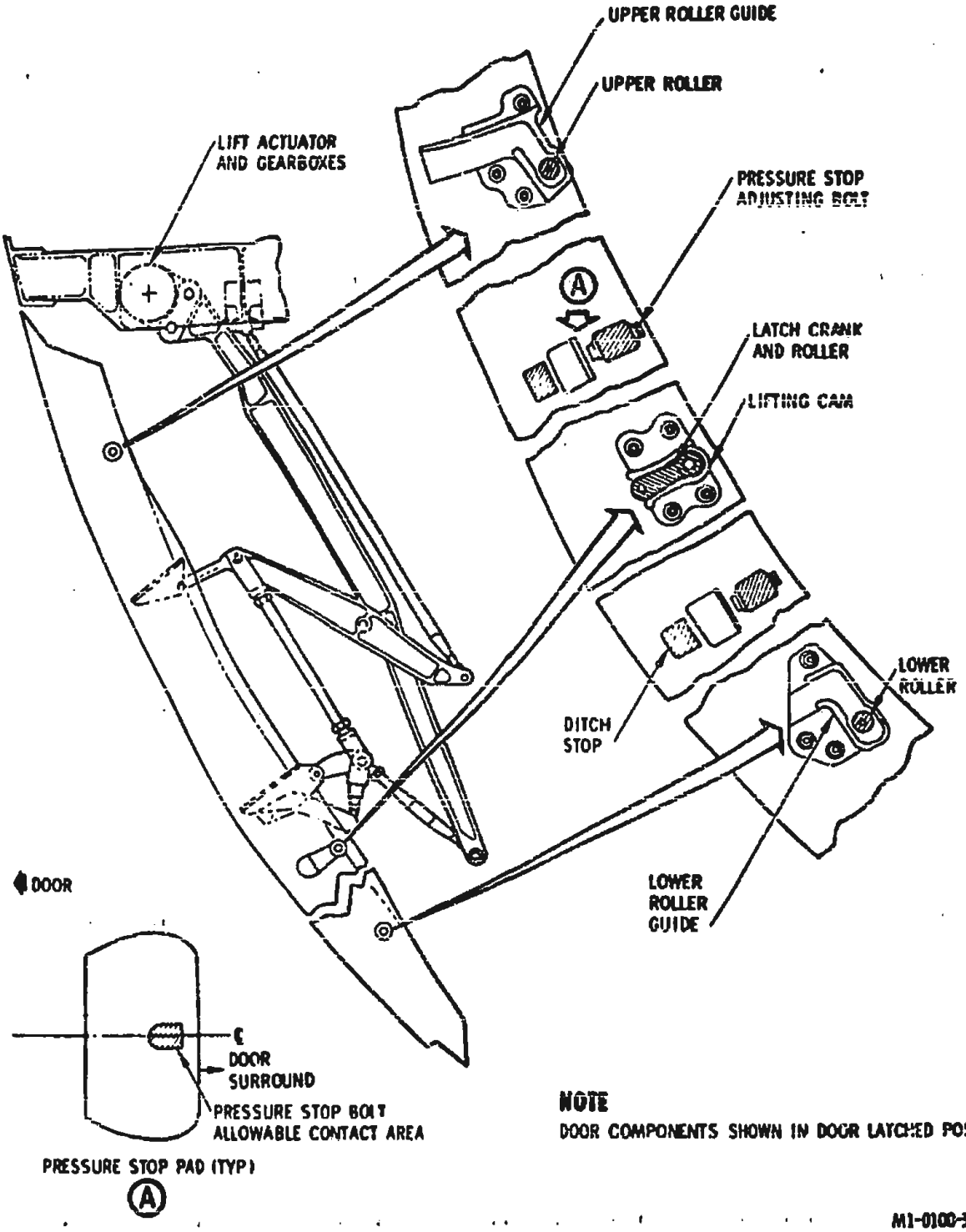


NOTE

(1) ROLLER ADJUSTMENTS TYPICAL AT FORWARD AND AFT ENDS OF DOOR

M1-0100-52-598

Cargo Door Closed (Not Latched)
Figure 5



Cargo Door Latched
Figure 6

Rig link adjustment affects the point at which the lock-up link roller contacts the lock-up cam during the unlatch cycle, and therefore determines the vertical position of the door for entry into the roller guides during the closing cycle.

In the event of total failure of the latch actuator mechanism, the latch torque tube may be manually rotated, to latch or unlatch the door, by removing access panels on the face of the door, and using a wrench directly on wrenching flats on the torque tube.

5. Lift Gearbox

The lift gearboxes (Ref. Fig. 8) are supported between structural members of the passenger cabin floor by a total of nine bolts each. The drive is transmitted from the lift actuator to the gearboxes by torque shafts, and through a planetary gear system to rotate the outer shell of the gearbox. Integral with the outer shell is a lug for connection to the door lift arms, and a lug which moves between two mechanical stop faces for overtravel range of movement limit.

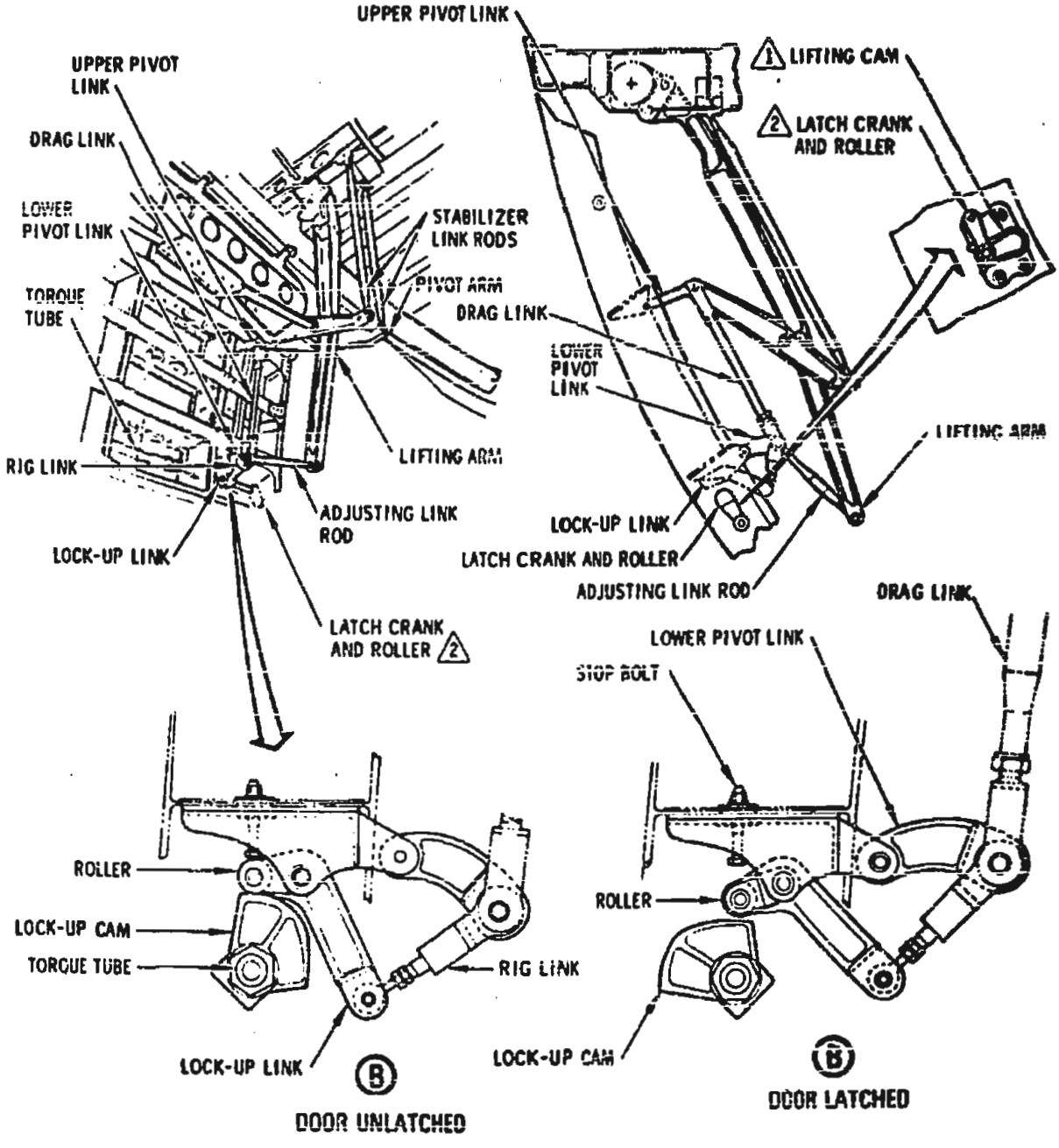
6. Lift Actuator

The lift actuator (Ref. Fig. 8) is mounted above the cargo door, by four attachment bolts. It has a manual drive input, a mechanically operated safety uplock pawl, an electrical connector, and two output torque shafts. A collar, clamped around the actuator end of each torque shaft prevents endwise movement of the shafts to maintain spline engagement at the actuator and gearbox.

NOTE: On aircraft with SB52-094, the uplock pawl is lockwired in the disengaged position and deactivated, and the uplock pawl push-pull cable has been removed.

NOTE: On aircraft 002-031 with SB52-135, and 032-999, an internal sequencing switch is added to the actuator which senses lock pawl position and insures lock pawl disengagement before door lifting or lowering can occur. To aid in disengaging the uplock pawl, a tension spring is added to the lock pawl release arm and overcenter springs at the push-pull cable switchbox.

The unit consists of a three phase AC motor which drives a combination planetary and spur gear train to two separate output shafts. When power is applied to drive the motor, a solenoid-operated brake is simultaneously released. A manual drive shaft connects into the gear train, providing an



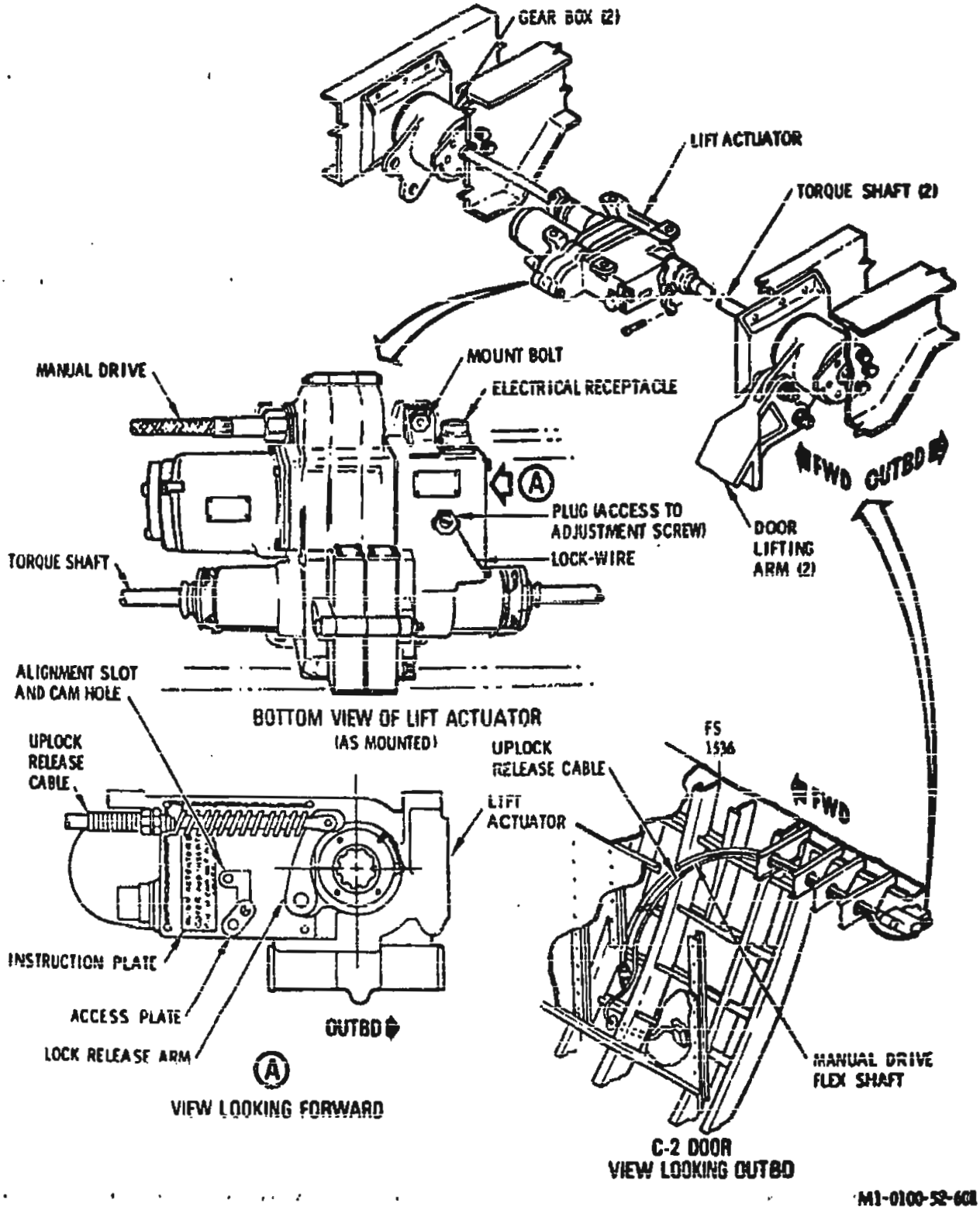
NOTE

(1) ON DOOR SURROUND STRUCTURE, FORWARD AND AFT OF DOOR

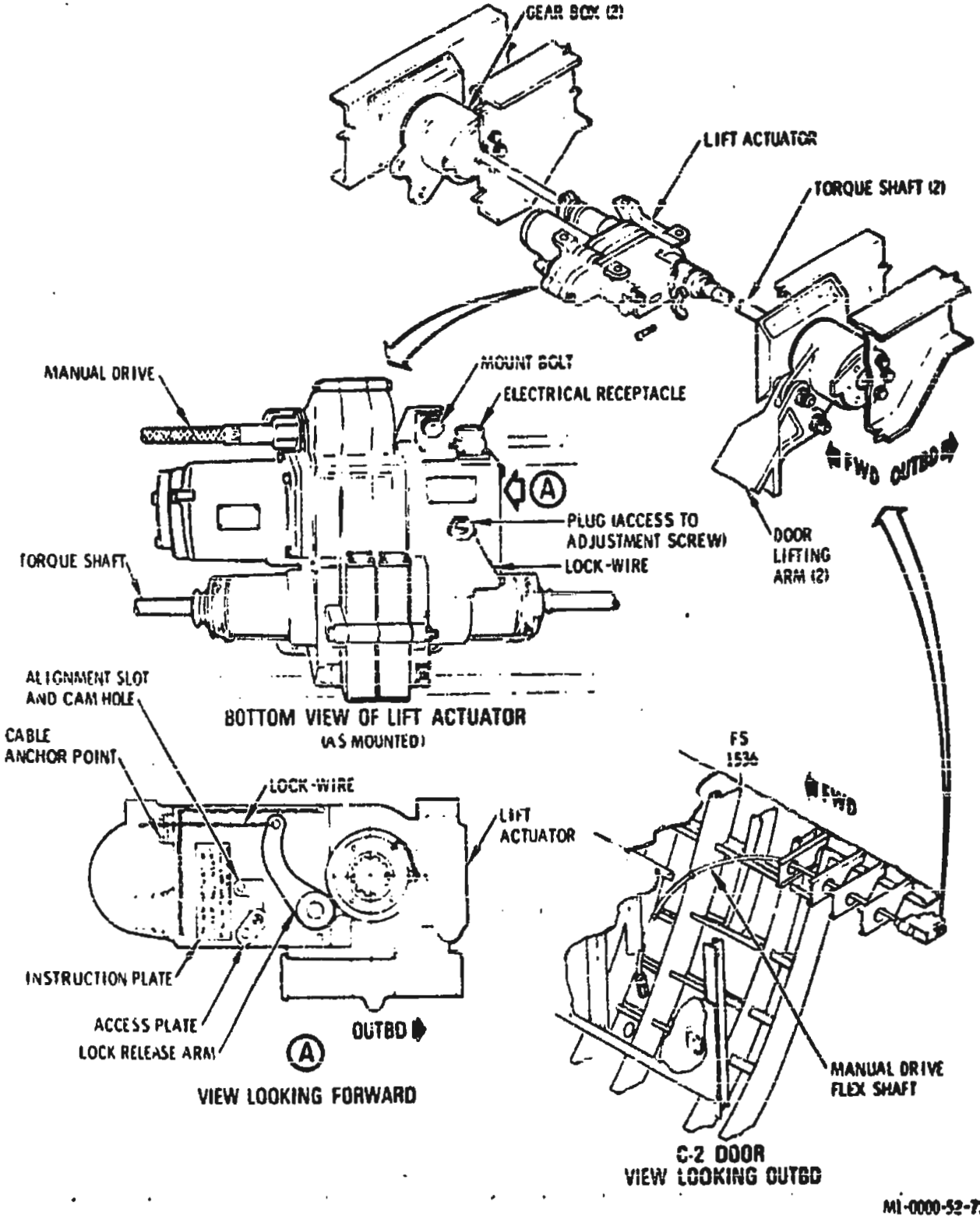
(2) ON FORWARD AND AFT ENDS OF DOOR AT EACH END OF TORQUE TUBE

MM: 0100-52-609

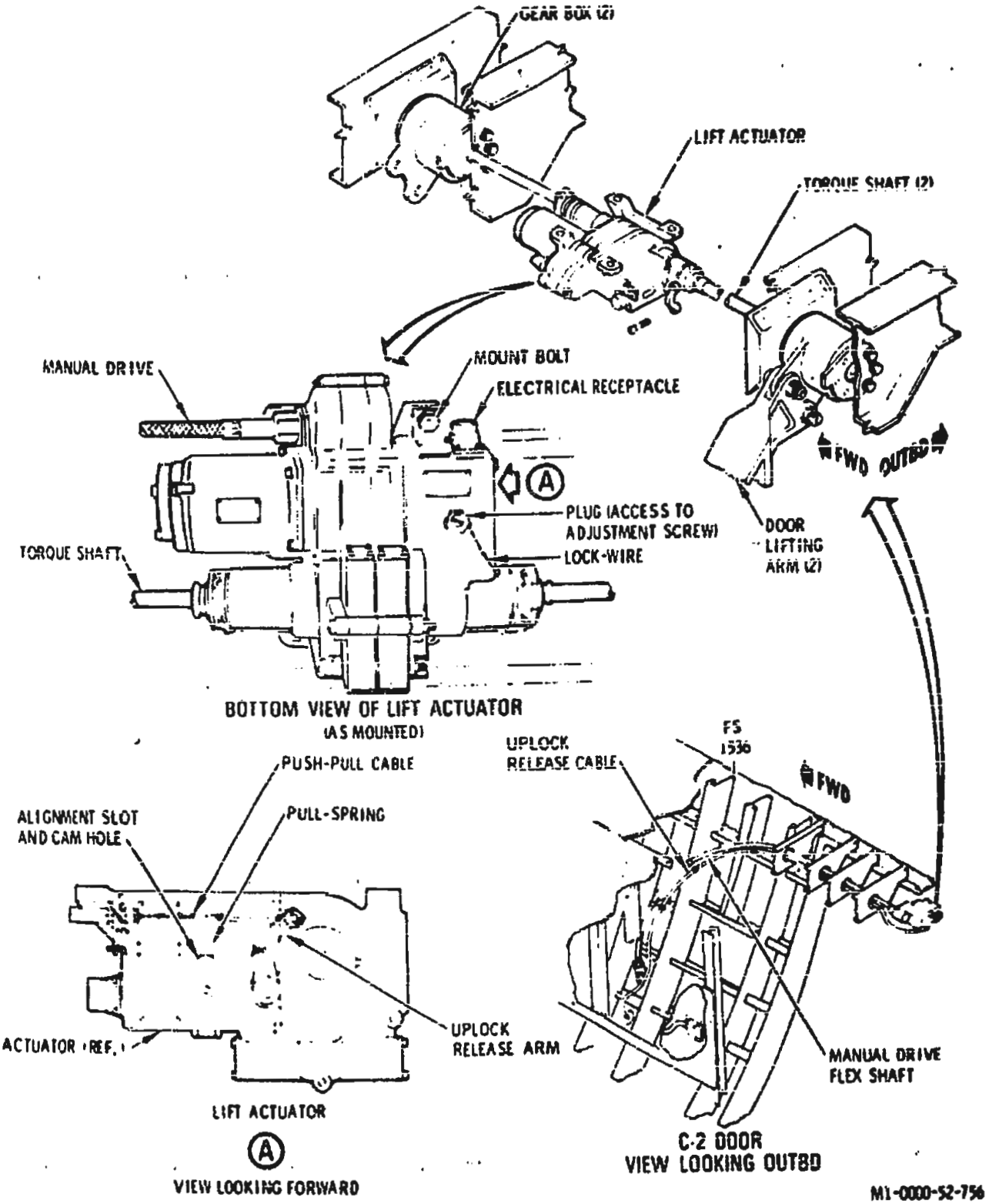
Lock-Up Mechanism
Figure 7



Lift Actuator and Gearbox Drive Mechanism
Figure 8



Lift Actuator and Gearbox Drive Mechanism
Figure 8



Lift Actuator and Gearbox Drive Mechanism
Figure 8

alternative means of actuator operation. At the lower face of the unit are four torque switches, sensitive to torque reaction in each direction of rotation at the individual output shafts. Should either of the switches operate in the selected direction, electrical power to the motor is removed. Within the actuator casing is an uplock ratchet pawl which is engaged/disengaged by an uplock release arm on the rear face of the actuator casing. The pawl is effective only in the door closing direction, as a safety feature, to physically prevent the actuator from rotating in a door close direction, if the motor brake or gear train should fail. The pawl is withdrawn during normal door operation, by depressing the door control switch access door, which is connected to the pawl operating lever by a flexible cable. Also in the actuator are the motor control relays and two cam-operated switches - one for motor speed control and the other for door open position limit.

The actuator motor windings are connected either delta or wye for low and high speed operation, controlled by two high speed relays. The relays are deenergized at the door closed and open positions, and are energized by closure of the speed control switch from 5 percent to 95 percent of the door range of movement. Door open and close power control relays are energized by the respective 28VDC control signal to direct three phase power for motor operation, and through a diode network to energize the motor brake. The high torque limit switches in the open and close circuits open the respective circuit in the event of actuator overload at either output shaft. The open limit switch is located in the open control circuit to stop the actuator when the door reaches its full open position. In addition this switch is used to complete the control circuit for the cargo loading system when the door is fully open.

The speed control, and open limit switches are controlled by cams within the actuator gearbox. Prior to installation the actuator must be indexed to its closed position by inserting a rig pin through an alignment slot into a hole in the cam. The actuator is then installed with the door in the closed position.

The C-3 door actuator is electrically similar to the C-2 actuator in all respects, except that two low torque limit switches are additionally installed, in series/parallel, in the door close control circuit. This prevents transfer of high forces if an obstruction is contacted.

7. Latch Actuator

The door is latched by a three phase AC motor driven linear type actuator, with provision for internal and external manual operation (Ref. Fig. 9). The actuator body is located by a bolt in a clevis fitting, and the rod end is connected to a lever at

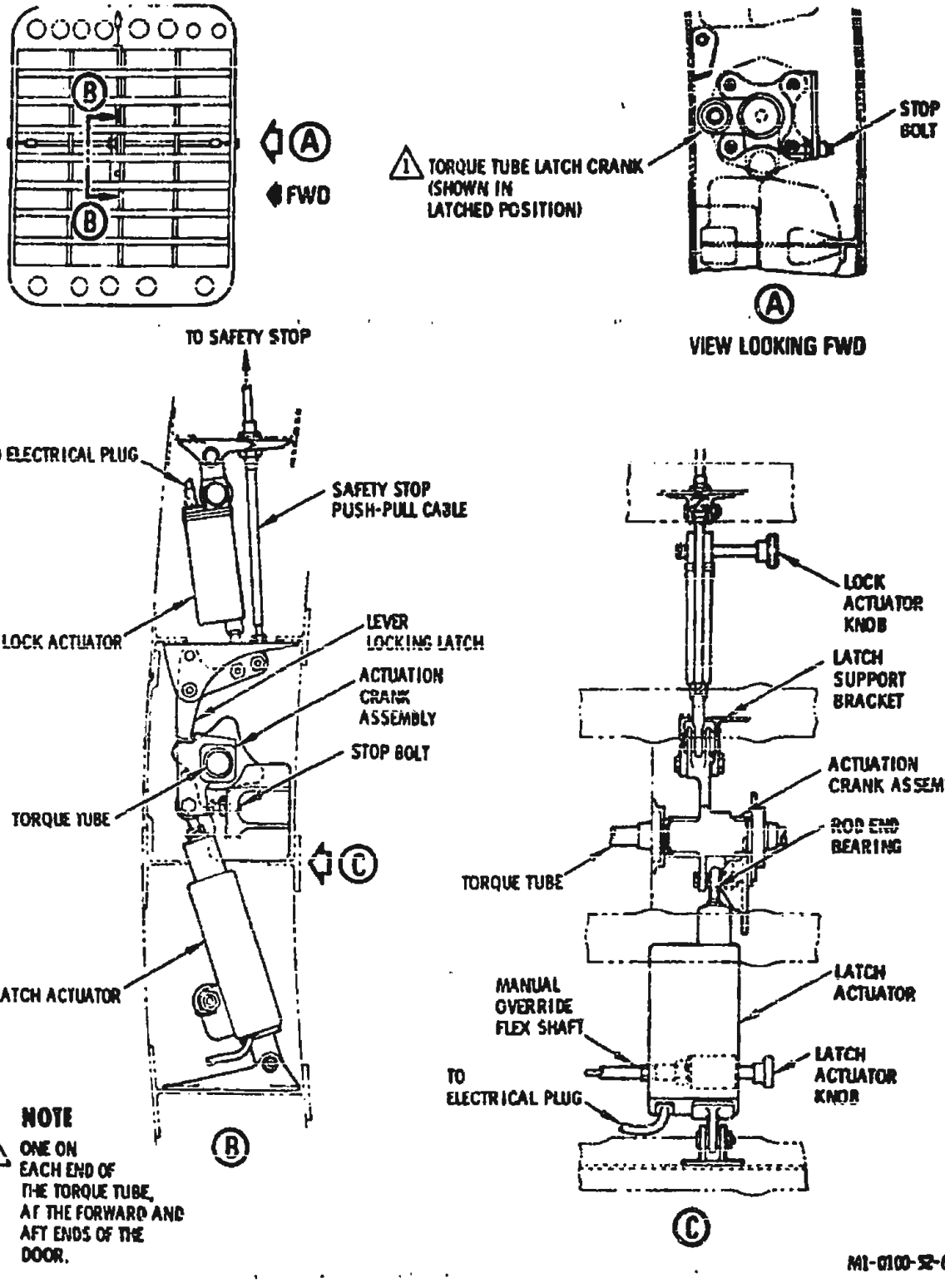
the center of the latch torque tube. Inside the actuator is a solenoid operated brake for the motor, thermal protection for each of the three phase supplies, a latch limit switch, and an unlatch limit switch. When power is applied in the selected direction of operation, the actuator operates over its full stroke range, controlled by the limit switches, rotating the torque tube and latch cranks to raise or lower the door. In the event of overrun in the latch direction, the torque tube lever contacts a stop bolt in the door structure. In the event of electrical malfunction, the actuator can be driven manually by a knob, accessible from the inside face of the door, or by a half inch square drive gearbox and a flexible drive shaft, accessible from the external lower face of the door. A clutch is provided in both the motor and manual drive inputs to the gearbox section of the unit.

8. Lock Actuator

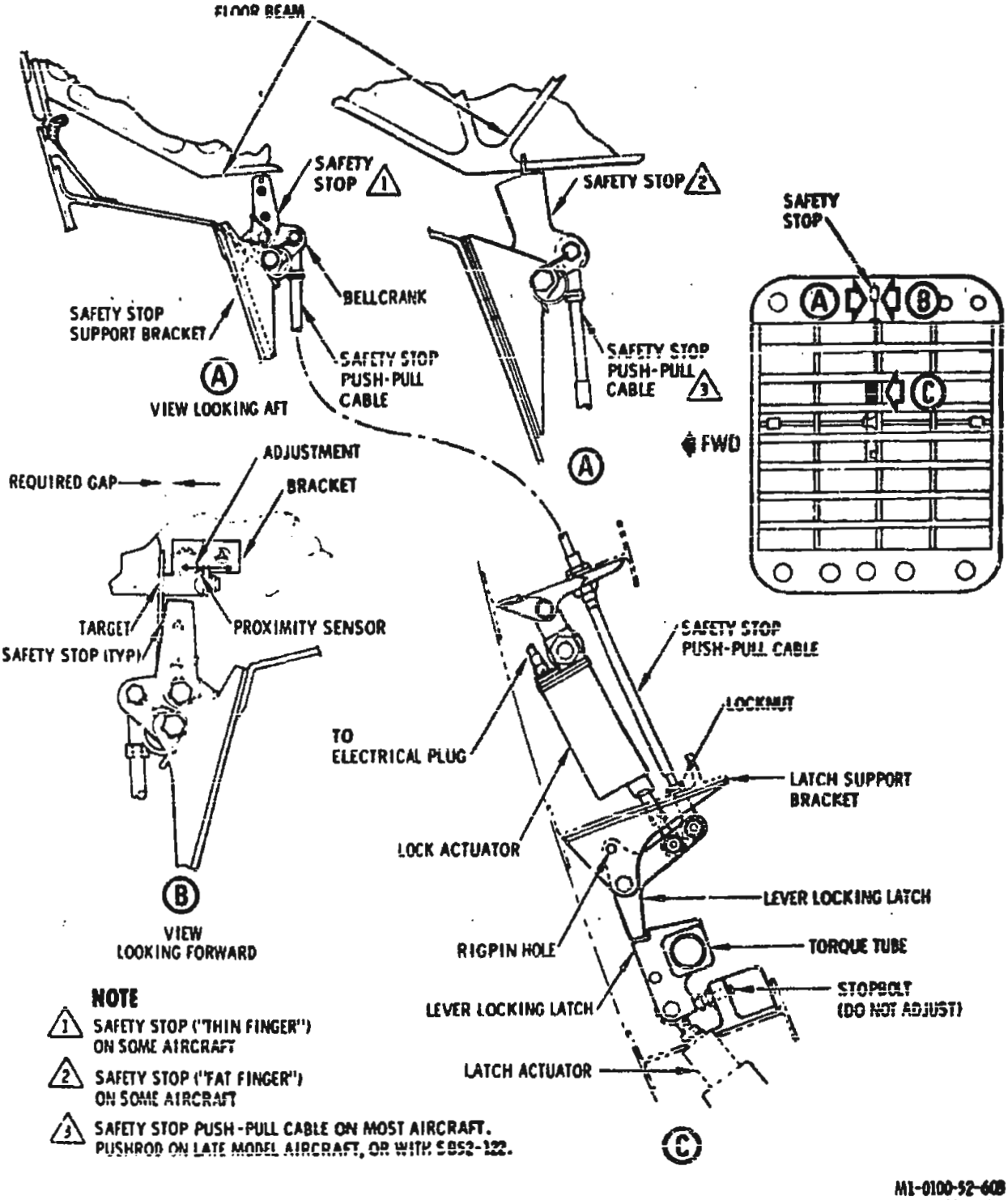
The lock actuator is DC motor driven to extend or retract its rod end, with range of movement controlled by internal limit switches (Ref. Fig. 9). The body of the actuator is located at its upper end in a clevis, and the rod end is connected to a lever locking latch. Connecting to the lever locking latch is a flexible push/pull cable. When the actuator is driven to the lock position, the latch engages in a detent on the latch lever to prevent inadvertent rotation of the latch torque tube, and the cable is pushed to extend the safety stop at the upper edge of the door, to positively prevent upward movement of the door from the latched position. In the event of electrical malfunction, the lock actuator can be manually operated by a knob extending from the rear face. The manual drive incorporates a clutch between it and output rod, but the motor is designed to stall with an overload condition.

9. Lock Mechanism

Lock actuator operation is transferred to the lever locking latch, which is pivot mounted in the door structure. With the actuator in the locked position the lever locking latch is rotated to locate a finger in the detent in the latch torque tube lever (Ref. Fig. 10). Also connected to the lever locking latch is either a flexible push/pull cable, or a pushrod assembly supported within the door structure, which connects to the safety stop, which is pivot mounted in a bracket at the top edge of the door. A spring assists the safety stop to move in the locking direction. When the lock actuator is driven to the unlock position, the lever locking latch is rotated to clear the torque tube lever detent, and pull the push/pull cable or pushrod to unlock the safety stop.



Latch and Lock Actuators
Figure 9



NOTE

1. SAFETY STOP ("THIN FINGER") ON SOME AIRCRAFT
2. SAFETY STOP ("FAT FINGER") ON SOME AIRCRAFT
3. SAFETY STOP PUSH-PULL CABLE ON MOST AIRCRAFT. PUSHROD ON LATE MODEL AIRCRAFT, OR WITH SB52-122.

M1-0100-52-608

Lock Mechanism
Figure 10

The cargo door safety stop, when locked or unlocked, is monitored by annunciator lights on the FE/SO annunciator panel, or the DOOR OPEN light on the pilots caution and warning annunciator lights panel. These lights are controlled by switching action of a target attached to the safety stop and a proximity sensor attached to fixed structure adjacent to the safety stop. When the door is closed, latched, and locked, the proximity sensor turns off the respective cargo door annunciator
R on the FE/SO panel.

R The lever locking latch, to which the lock actuator and
R push/pull cable or pushrod are attached, can be located in the
R lock position by a rig pin, inserted through its support
R bracket.

R The push/pull cable or pushrod length is adjustable by means of
R rod end fittings to provide the requisite clearance between the
R safety stop and the face of the support bracket.

R The correct gap between the extended safety stop and the
R fuselage structure reaction point is established by adding or
R removing shims at the reaction fitting, or, on C-2 door, by
R moving the safety stop support bracket, vertically, on its
R serrated plates. In the latter case, the push/pull cable or
R pushrod would have to be readjusted to re-establish the correct
R clearance between the safety stop and its support bracket.

R The proximity sensor gap is set by moving the sensor, or its
R support bracket, on slotted bolt holes.

10. Door Close Limit Switch

The cargo door close limit switch (Ref. Fig. 11) is located at the aft lower corner of each door, and serves to remove power from the lift actuator and transfer control power to operate the latch actuator. It is mounted inside the door structure, and is operated by an activator arm (or a switch lever arm) attached to a shaft which passes through the door aft side member. At the other end of the shaft is a lever with a roller. As the door moves toward its closed position the roller contacts the outboard face of the door lower roller guide, to rotate the shaft and activator (or switch lever arm), and operate the switch. A coil spring positions the operating mechanism away from the switch activation position.

On aircraft 001-031,
the activator arm is positioned by its adjusting bolt, to provide a specified dimension between the mounting bracket and the activator arm. The switch striker bolt is adjusted to operate the limit switch when the door is at the closed position

with a specified clearance between the aft lower door roller and the inboard face of the roller guide.

On aircraft 032-999,
the switch lever arm is adjusted by its stop bolt to provide a specified dimension between the switch lever arm and the spacer of the aft lower door roller. The switch lever arm is adjusted by its clevis assembly to operate the limit switch when the door is at the closed position with a specified clearance between the aft lower door roller and the inboard face of the roller guide.
On aircraft with SB52-136 (switch heater),
a heating element is installed in the switch actuator shaft to prevent freezing in cold weather operation.

11. Door Actuation Control Switch Mechanism

Door actuation control switches are enclosed in a flush-mounted actuation switchbox (Ref. Fig. 12). Paddle-type pivoting doors are provided for access and actuation of the switches. The paddle door pivot extends out of the box and incorporates a lever to which is connected a push/pull cable which is routed up the inner side of the fuselage, across the top of the door surround structure, to terminate at the lift actuator safety uplock release lever. This ensures that the safety uplock pawl is withdrawn before the door control switch can be operated.

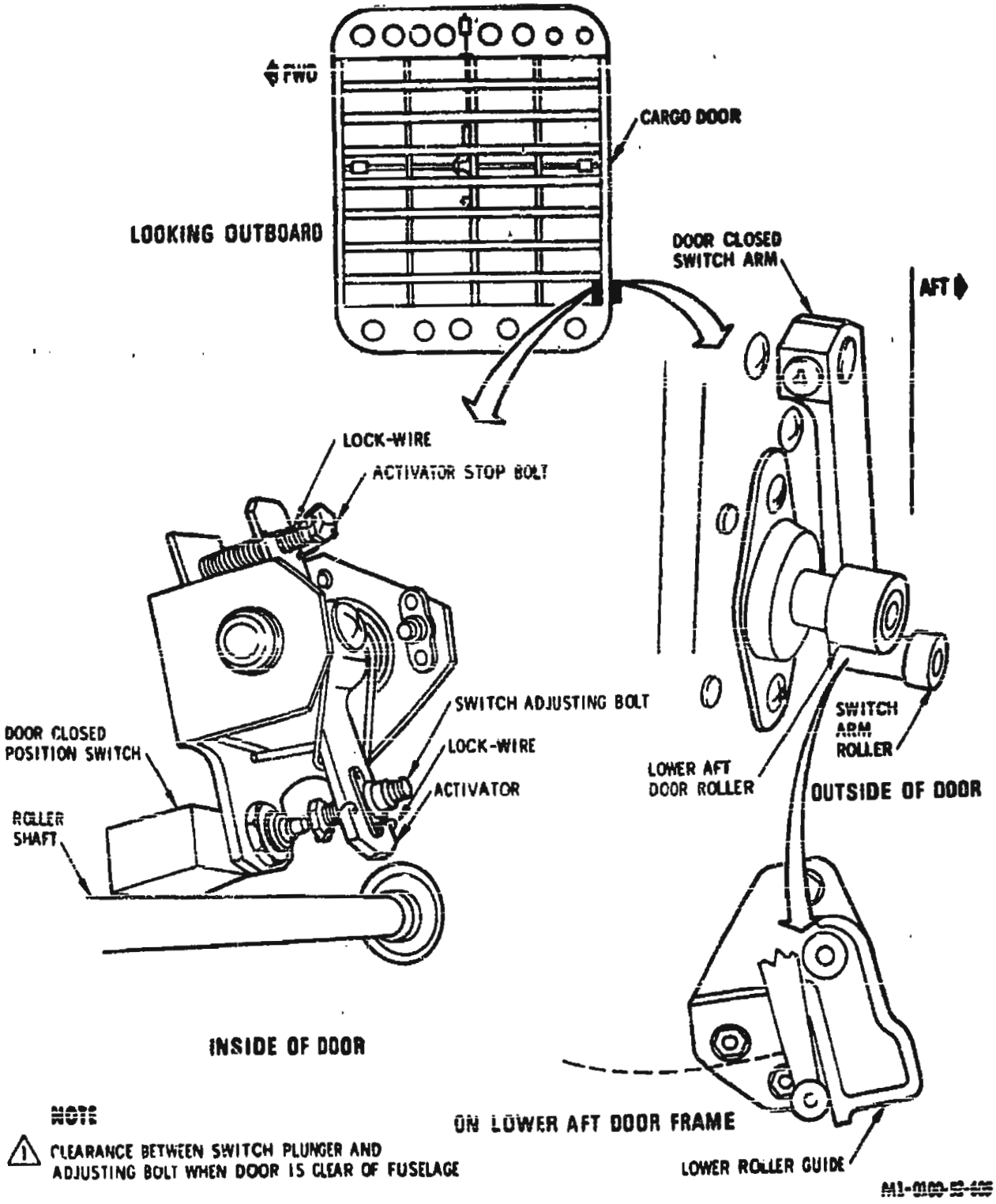
NOTE: On aircraft with SB52-094,
the safety uplock release lever at the rotary actuator is lockwired to the disengaged position and the push-pull cable removed.

CAUTION: ON AIRCRAFT WITHOUT SB52-094,
THE PADDLE DOOR MUST BE HELD FULLY OPEN DURING DOOR ACTUATION IN THE DOOR CLOSE DIRECTION. FAILURE TO DO SO MAY RESULT IN DAMAGE TO THE LIFT ACTUATOR.

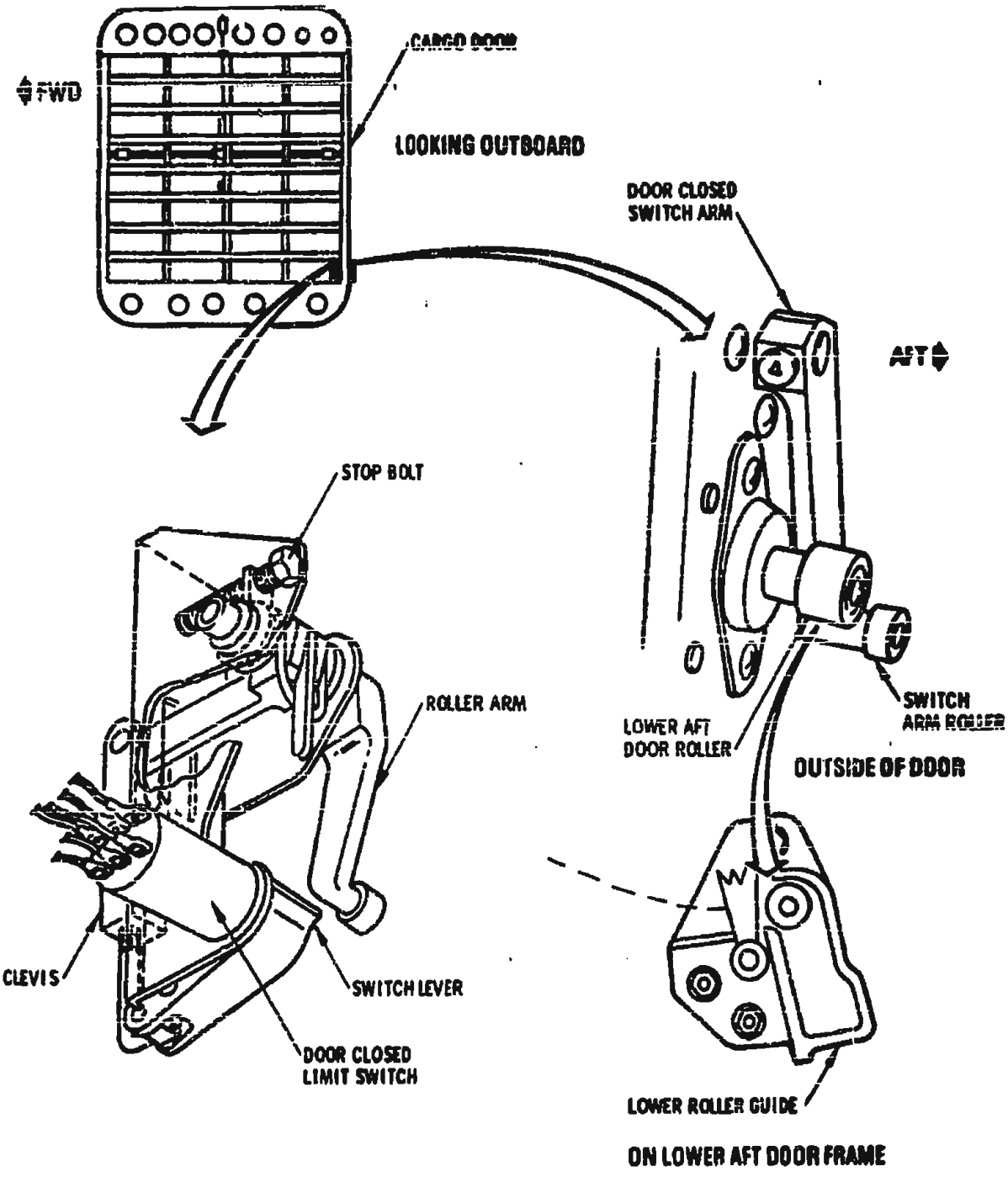
NOTE: On aircraft 002-031 with SB52-135, and 032-999,
Overcenter, torsion springs in the actuation switchbox hold the switchbox door and the push-pull cable attached to it in the fully open position to insure disengagement of the actuator uplock pawl. It is necessary to manually return the switchbox door to flush-closed position to re-engage uplock pawl when door reaches full open position.

12. Cargo Door Unlock Switch

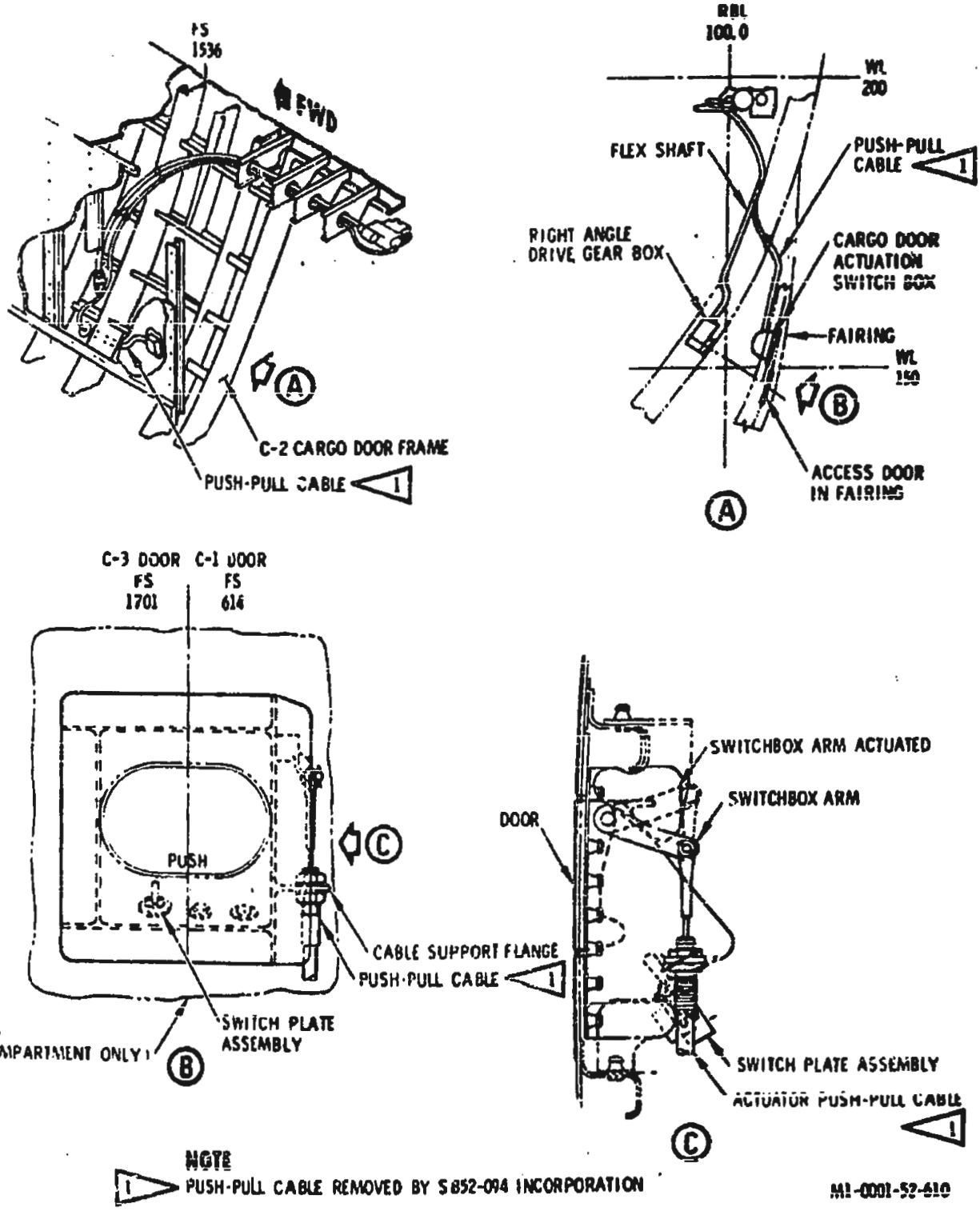
The door unlock switch (Ref. Fig. 13) is used to operate the lock actuator in the door open mode only. The switch is operated by a handle which extends through the door outer



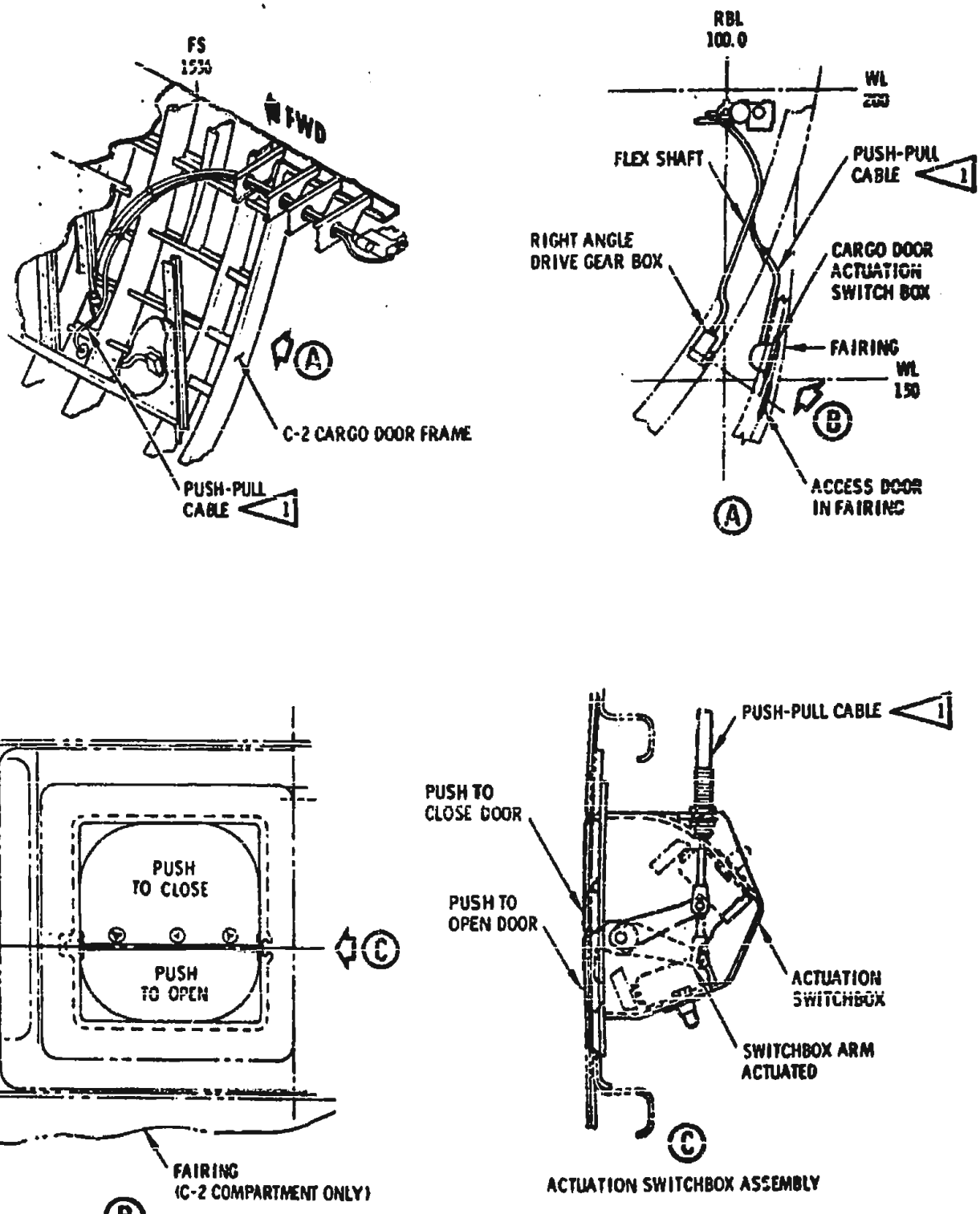
Cargo Door Close Limit Switch
Figure 11



Cargo Door Closed Limit Switch
Figure 11



Door Actuation Control Switch
Figure 12

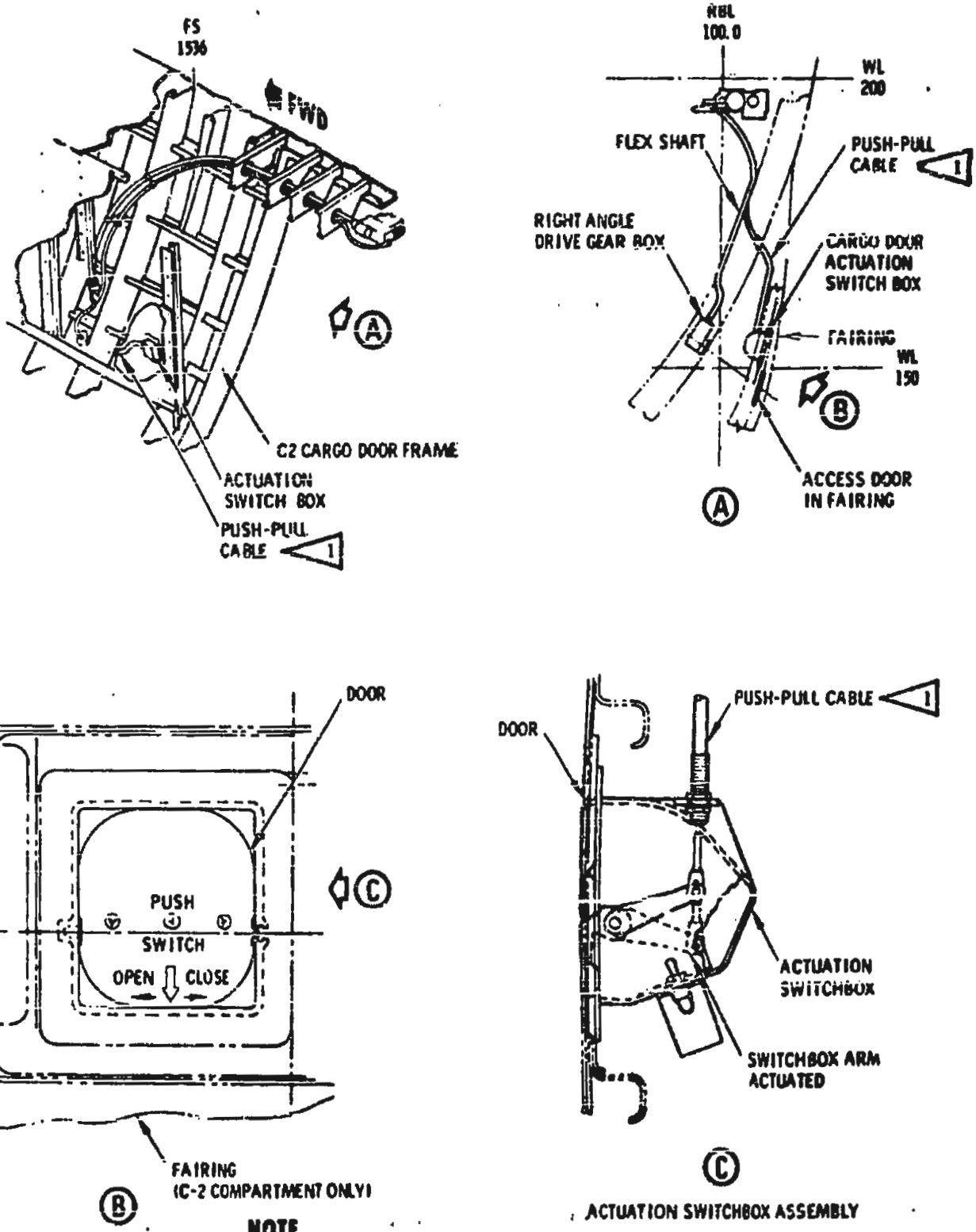


M1-0001-52-609

NOTE

1 PUSH-PULL CABLE REMOVED BY SB52-094 INCORPORATION

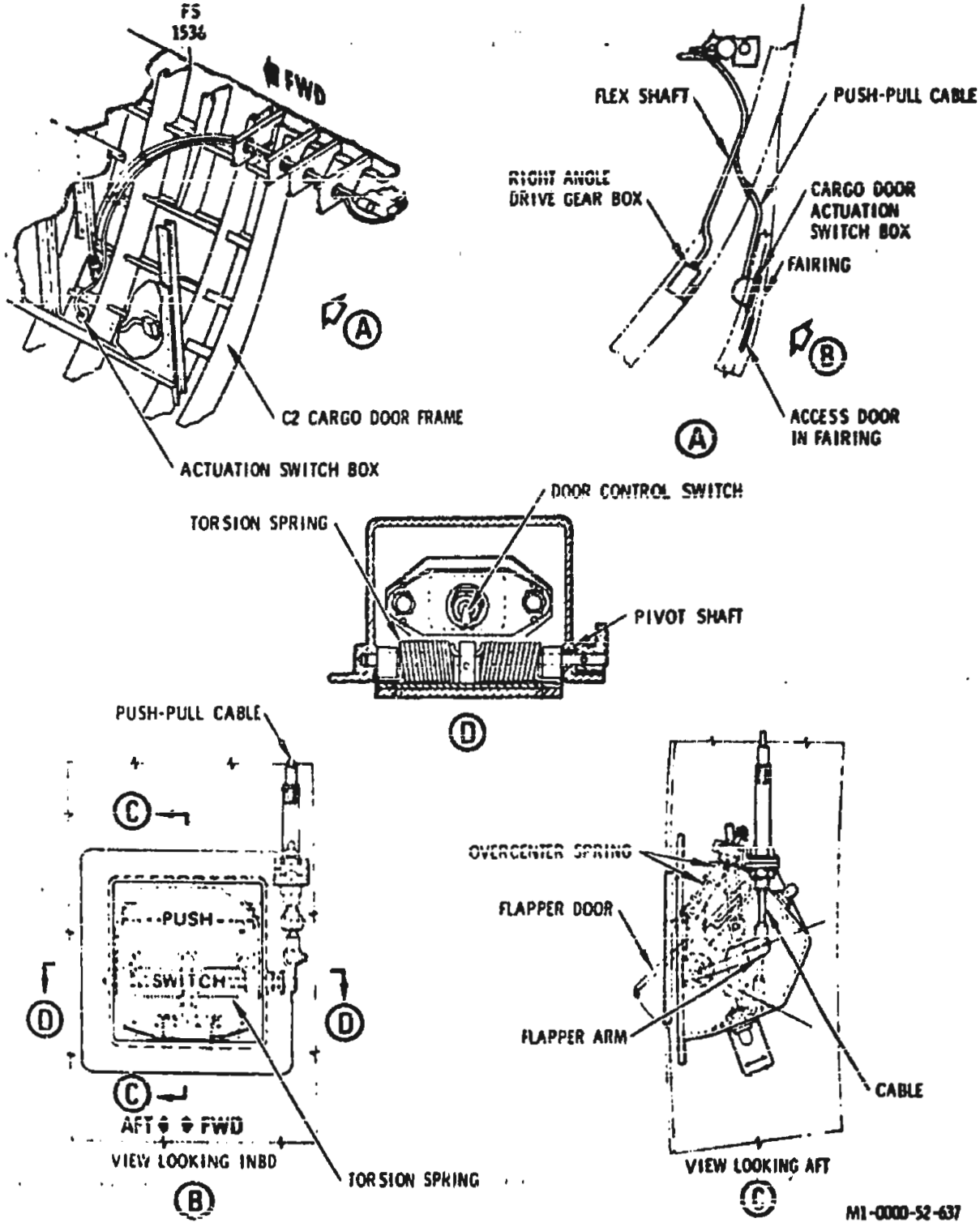
Door Actuation Control Switch
Figure 12



NOTE

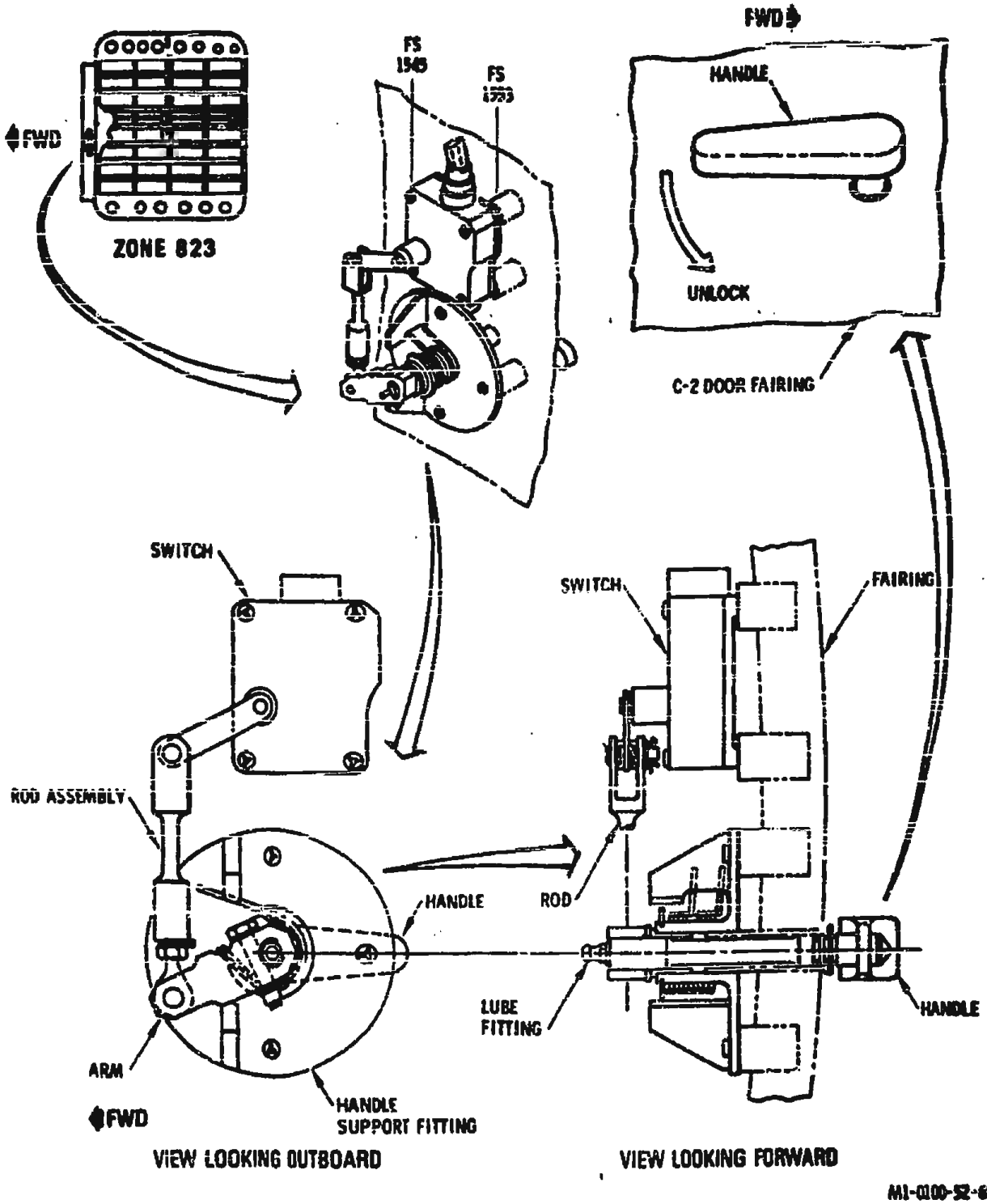
1 PUSH-PULL CABLE REMOVED BY SB52-004 INCORPORATION

Door Actuation Control Switch
Figure 12



Door Actuation Control Switch
Figure 12

surface, and in its released condition lays in line with the airflow. When the handle is rotated counterclockwise against coil spring tension, the shaft turns, and by a connecting rod, operates the switch actuating arm. Closure of the switch contacts will operate the lock actuator until its unlock limit switch removes power. On release, the handle returns to the horizontal position.



Cargo Door Unlock Switch
Figure 13

CARGO COMPARTMENT DOORS - MAINTENANCE PRACTICES

1. General

The Cargo Door Identification Index in this section is intended to provide for "quick-look" identification of the cargo doors and their related system components.

A cross-referenced Cargo Doors Maintenance Procedures Index is also included to simplify identification of maintenance procedures.

CARGO DOORS MAINTENANCE INDEX

SUBJECT/ATA & PAGE NO.

A-B

ACTUATOR

LATCH.....52-31-08, 401

LIFT.....52-34-01, 401

LOCK.....52-31-03, 401

ACTUATION SYSTEM.....52-34-00, 001
52-34-00, 101
52-34-00, 201
52-34-00, 501

ADJUSTMENT TOOLS.....52-30-01, 601

ADJUSTING LINK, ADJUSTMENT OF.....52-30-04, 501

AFT CARGO COMPARTMENT DOOR.....52-31-01, 401

APPROVED REPAIR, DOOR SEAL.....52-31-05, 801

C

CARGO DOOR (C-1, C-2 AND C-3).....52-31-01, 401
ACCESS.....52-34-00, 201

ACTUATION SYSTEM, ADJUSTMENT AND TEST.....52-34-00, 501

CLOSING CHECK.....52-30-04, 501

CLOSING PROCEDURES, MANUAL ALTERNATE.....52-34-00, 201

CARGO DOORS MAINTENANCE INDEX (Cont)

SUBJECT/ATA & PAGE NO.

LATCHING COMPONENT FAILURE - DOOR OPENING.....52-34-00, 201

LOCKING COMPONENT FAILURE - DOOR OPENING.....52-34-00, 201

LOCKING COMPONENT FAILURE = DOOR CLOSING.....52-34-00, 201

LATCHING COMPONENT FAILURE = DOOR CLOSING.....52-34-00, 201

OPENING PROCEDURES, MANUAL ALTERNATE.....52-34-00, 201

OPERATIONAL TESTS

ELECTRICAL MODE FROM OUTSIDE AIRCRAFT.....52-34-00, 501

ELECTRICAL MODE FROM INSIDE AIRCRAFT.....52-34-00, 501

FUNCTIONAL TEST.....52-34-00, 501

MANUAL MODE FROM INSIDE AIRCRAFT.....52-34-00, 501

R REMOVAL AND INSTALLATION.....52-31-01, 401

CAUTION LIGHTS.....52-71-00, 501

CLEARANCE ADJUSTMENT, PROXIMITY SENSOR.....52-30-19, 501

CLEARANCE ADJUSTMENT, SAFETY STOP.....52-30-19, 501

R CLOSED POSITION, SWITCH, LIMIT.....52-31-16, 501

COMPLETION, MAINTENANCE, CHECK.....52-30-31, 601

D-E

DEACTIVATION PROCEDURES, CARGO DOOR.....52-34-00, 201

DOOR INSTALLATION.....52-31-01, 401

DOOR OPENING MECHANISM.....52-34-09, 401

DRAG LINK ADJUSTMENT.....52-30-04, 401

EQUIPMENT AND MATERIALS.....52-30-01, 601

ELECTRICAL OPERATION.....52-34-00, 501

CARGO DOORS MAINTENANCE INDEX (Cont)

SUBJECT/ATA & PAGE NO.

F

FAULT ISOLATION

COMPONENT LOCATOR.....52-34-00, 101

DIAGRAMS

CARGO DOOR WILL NOT UNLOCK ELECTRICALLY.....52-34-00, 101

CARGO DOOR WILL NOT UNLATCH ELECTRICALLY.....52-34-00, 101

CARGO DOOR WILL NOT CLOSE ELECTRICALLY.....52-34-00, 101

CARGO DOOR WILL NOT OPEN ELECTRICALLY.....52-34-00, 101

CARGO DOOR WILL NOT LATCH ELECTRICALLY.....52-34-00, 101

CARGO DOOR WILL NOT LOCK ELECTRICALLY.....52-34-00, 101

LOCK ACTUATOR (GREEN) INDICATING LIGHT ON WITH DOOR NOT LOCKED (DOOR WARNING LIGHT ON).....52-34-00, 101

LOCK ACTUATOR (GREEN) INDICATING LIGHT OUT WITH DOOR LOCKED (DOOR WARNING LIGHT OUT).....52-34-00, 101

ELECTRICAL SCHEMATIC, CARGO DOOR ACTUATION SYSTEM.52-34-00, 101

ELECTRICAL SCHEMATIC, CARGO DOOR WARNING SYSTEM...52-71-00, 101

FORWARD AND CENTER CARGO COMPARTMENT DOORS (C-1 AND C-2).....52-31-01, 401

FULL OPEN ADJUSTMENT, CARGO DOOR.....52-30-25, 501

G-H-I

GAPS AND MISMATCH, CARGO DOOR CLEARANCE DIMENSIONS....52-30-13, 501

GEARBOX, LIFT (POWERED HINGE).....52-34-02, 401

GEARBOX, RIGHT-ANGLE DRIVE.....52-34-05, 401

HOOK, PIVOT PIN, LOWER, INSPECTION.....52-34-53, 601

HOOKS, UPPER & LOWER.....52-30-13, 501

CARGO DOORS MAINTENANCE INDEX (Cont)

SUBJECT/ATA & PAGE NO.

HOOK, LOWER, OVERLAP CHECK.....52-30-13, 501

HOOK, FORWARD AND AFT CLEARANCE.....52-30-13, 501

INDEX, FAULT ISOLATION.....52-INDEX

INSPECTION, MAINTENANCE COMPLETION.....52-30-31, 601

J-K-L

LATCH ACTUATOR.....52-31-08, 401

LATCHING CHECK, CARGO DOOR.....52-30-07, 501

LIFT ACTUATOR.....52-34-01, 401

LIFT ACTUATOR, FULL OPEN ADJUSTMENT.....52-30-25, 501

LIFT GEARBOX.....52-34-02, 401

R LIMIT SWITCH, DOOR CLOSED POSITION.....52-31-16, 501

LINER, DOOR.....52-31-07, 501

LINK, ADJUSTING.....52-30-04, 501

LINK, DRAG.....52-30-04, 501

LINK, RIG.....52-30-04, 501

LOCK ACTUATOR, UNLOCK SWITCH HANDLE.....52-31-18, 401

LOCK ACTUATOR, UNLOCK SWITCH.....52-30-28, 501

LOWER HOOK, CARGO DOOR.....52-30-13, 501

LOWER HOOK, FORWARD AND AFT CLEARANCE.....52-30-13, 501

LOCKED POSITION CHECK, SAFETY STOP.....52-30-19, 501

M-N-O-P-Q

MAINTENANCE COMPLETION INSPECTION.....52-30-31, 601

MANUAL DRIVE FLEX SHAFT.....52-34-05, 401

MANUAL OPERATION, CARGO DOOR.....52-34-00, 501

SUBJECT/ATA & PAGE NO.

MATERIALS AND EQUIPMENT, CARGO DOOR.....52-30-01, 601
OPENING MECHANISM, CARGO DOOR.....52-34-09, 401
OPERATIONAL TESTS.....52-34-00, 501
PAD, PRESSURE STOP.....52-30-07, 501
PREPARATION FOR CARGO DOOR RIGGING.....52-30-01, 601
PRESSURE CHECK, SEAL.....52-30-01, 601
PRESSURE STOP BOLT AND HOOKS.....52-30-13, 501
PROXIMITY SENSOR CLEARANCE CHECK.....52-30-19, 501
PROXIMITY SENSOR ADJUSTMENT.....52-30-22, 501

R-S-T

RIGHT-ANGLE DRIVE GEARBOX.....52-34-05, 401
RIGGING, PREPARATION FOR.....52-30-01, 601
RIG LINK ADJUSTMENT.....52-30-04, 501
RIG PIN INSTALLATION, SAFETY STOP.....52-30-19, 501
LIFT ACTUATOR.....52-34-01, 401
SEAL, DOOR.....52-31-05, 401
SEAL PRESSURE CHECK.....52-30-01, 601
SAFETY STOP ADJUSTMENT.....52-30-19, 501
SENSOR CHECK, PROXIMITY.....52-30-19, 501
SENSOR ADJUSTMENT, PROXIMITY.....52-30-22, 501
SURROUND STRUCTURE CLEANNESS CHECK.....52-30-01, 601
R SWITCH, LIMIT, DOOR CLOSED POSITION.....52-31-16, 501
SWITCH, DOOR UNLOCK.....52-30-28, 501

CARGO DOORS MAINTENANCE INDEX (Cont)

SUBJECT/ATA & PAGE NO.

TARGET ADJUSTMENT.....52-30-19, 501

TOOLS AND EQUIPMENT.....52-30-01, 601

U-V-W-X-Y-Z

UNLOCK SWITCH, CARGO DOOR.....52-30-28, 501

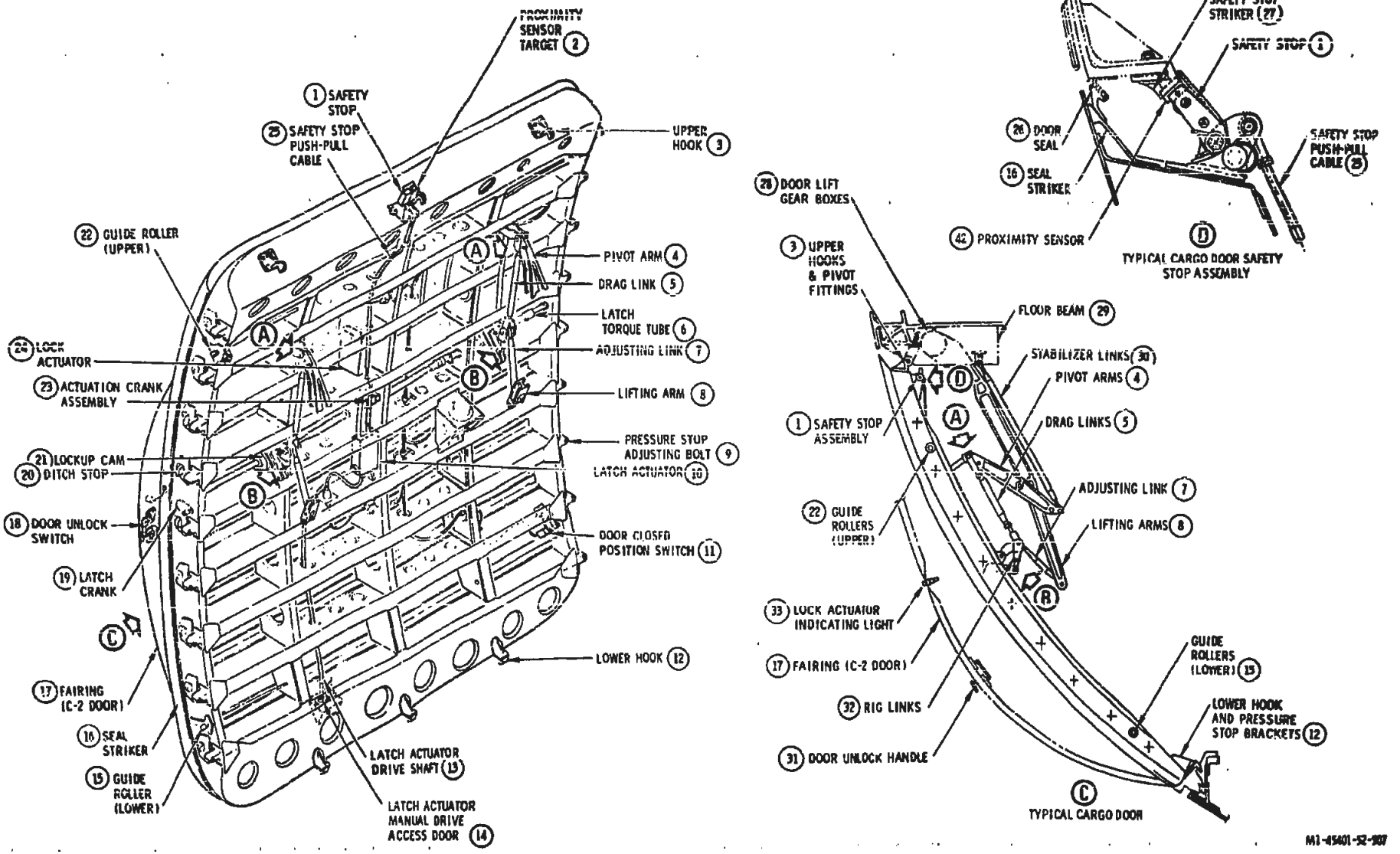
UPPER HOOK, CARGO DOOR.....52-30-13, 501

UPPER HOOK FORWARD AND AFT CLEARANCE CHECK.....52-30-13, 501

UPPER HOOK OVERLAP AND CLEARANCE CHECK.....52-30-13, 501

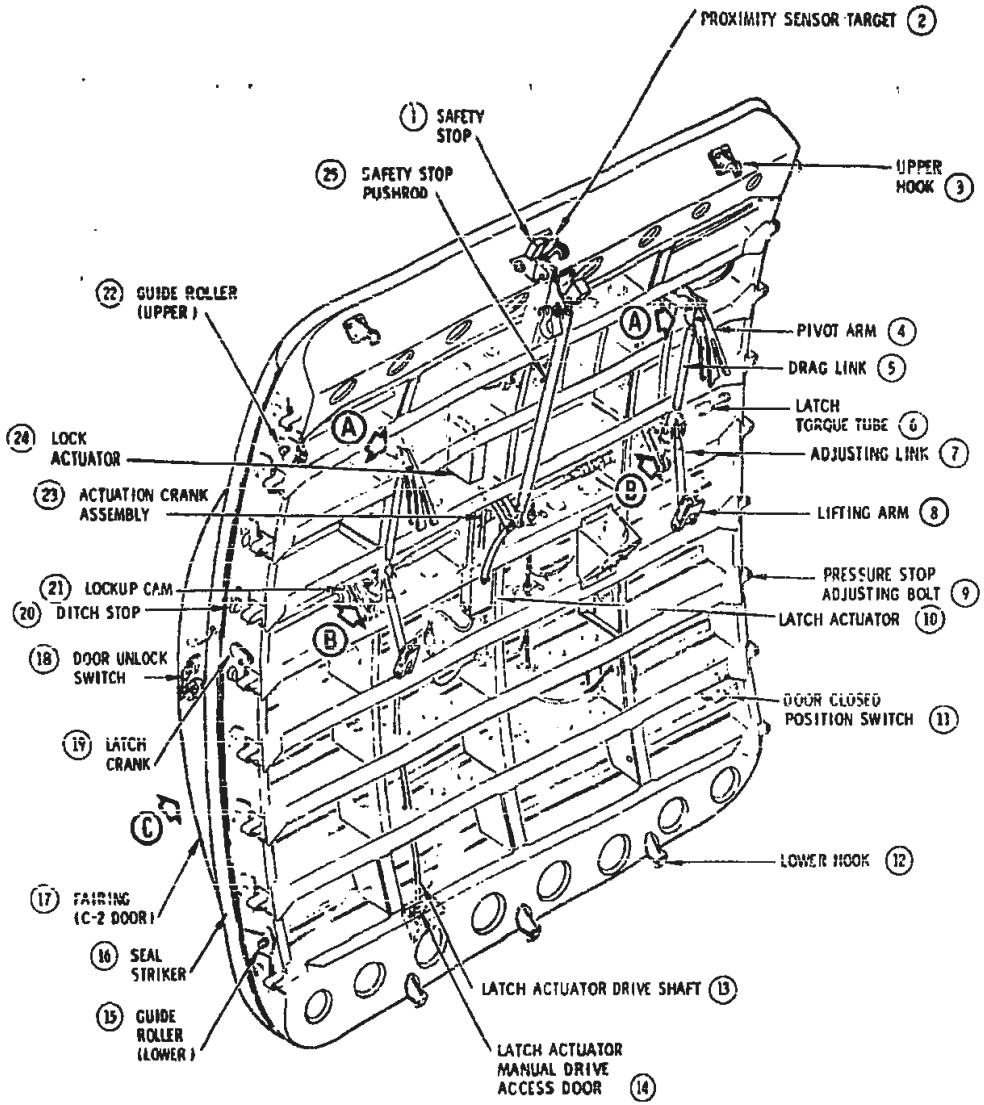
WARNING SYSTEM, CARGO DOOR.....52-71-00, 001
52-71-00, 101

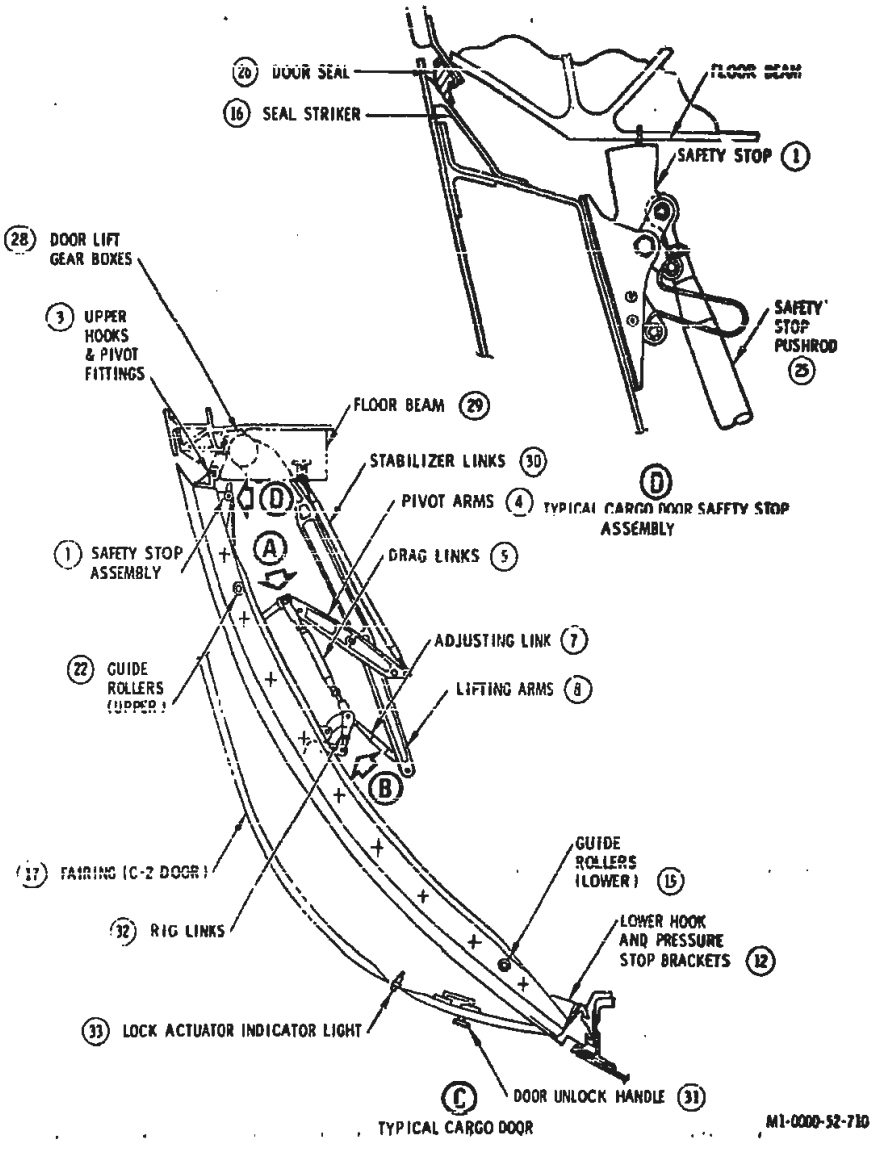
WEDGE INSTALLATION.....52-30-13, 501



Cargo Door Identification Index
Figure 201 (Sheet 1)

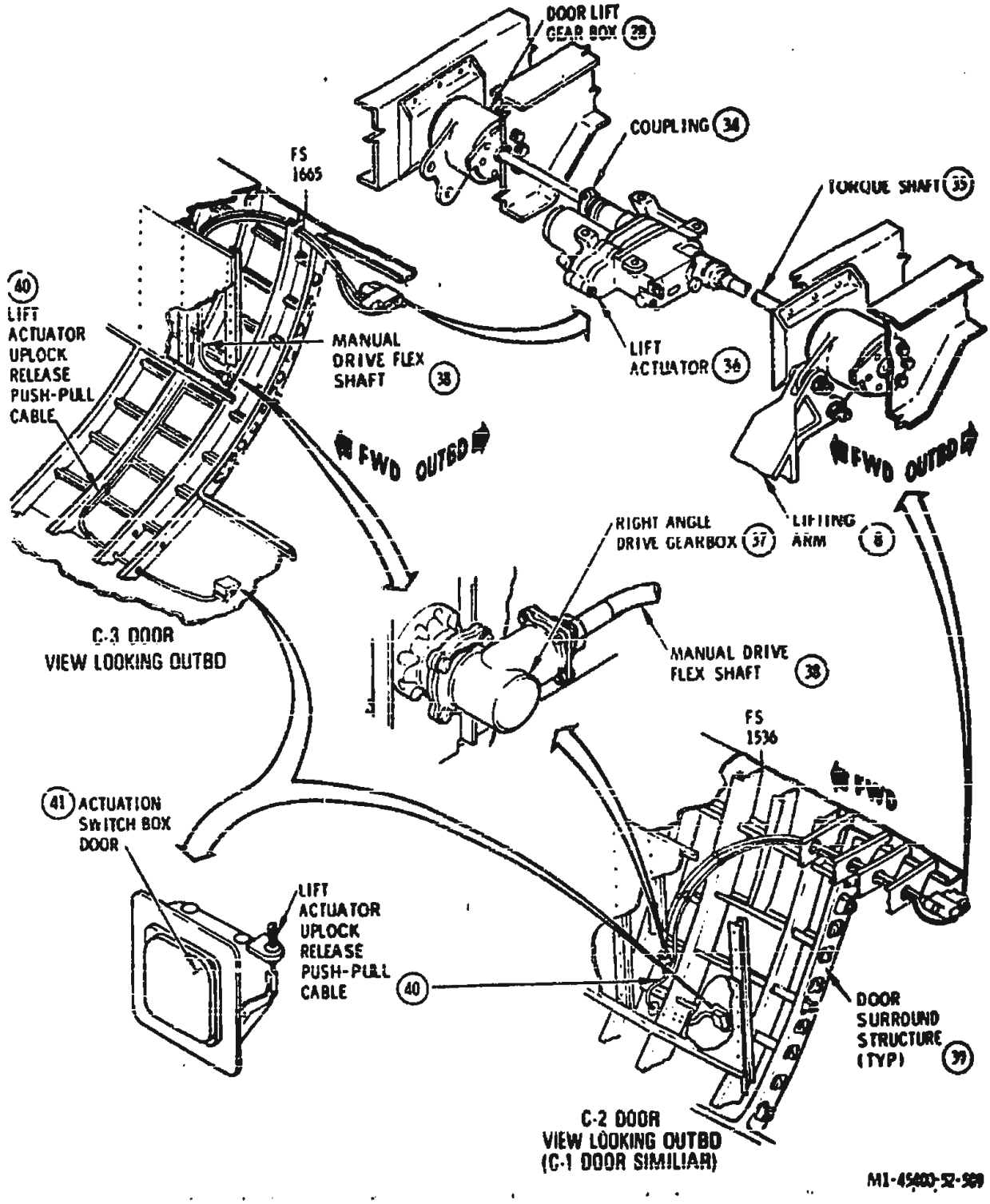
R
R
001B EFFECTIVITY: 001, 003-013, 015-031





Cargo Door Identification Index
Figure 201 (Sheet 1)

R EFFECTIVITY: 002, 014, 032-999
R
0018


DOOR LIFT GEAR BOX (28)
COUPLING (34)
FS 1665
TORQUE SHAFT (35)
(40) LIFT ACTUATOR UPLOCK RELEASE PUSH-PULL CABLE
MANUAL DRIVE FLEX SHAFT (38)
LIFT ACTUATOR (36)
FWD OUTBD
FWD OUTBD
RIGHT ANGLE DRIVE GEARBOX (37)
LIFTING ARM (8)
C-3 DOOR VIEW LOOKING OUTBD
MANUAL DRIVE FLEX SHAFT (38)
FS 1536
(41) ACTUATION SWITCH BOX DOOR
LIFT ACTUATOR UPLOCK RELEASE PUSH-PULL CABLE (40)
DOOR SURROUND STRUCTURE (TYP) (39)
C-2 DOOR VIEW LOOKING OUTBD (C-1 DOOR SIMILIAR)
M1-45400-52-909

R Cargo Door Identification Index
R Figure 201 (Sheet 2)

EFFECTIVITY: ALL

ITEM NO.	NOMENCLATURE	PRIMARY FUNCTION
1	SAFETY STOP	WHEN IN DOOR LOCKED POSITION IT BLOCKS UPWARD MOVEMENT OF DOOR
2	PROXIMITY SENSOR TARGET	STEEL TARGET ATTACHED TO SAFETY STOP - IT OPERATES WITH PROXIMITY SENSOR TO SWITCH CARGO DOOR WARNING LIGHTS ON OR OFF TO IDENTIFY A DOOR UNLOCKED OR LOCKED CONDITION
3	UPPER HOOKS	WITH UPPER PIVOT FITTINGS THEY FUNCTION AS PRESSURE STOPS TO SUPPORT TOP OF DOOR
4	PIVOT ARMS	ARE PART OF THE DOOR LIFT SCISSOR MECHANISM. THEY MOVE DOOR OUTBOARD OR INBOARD DURING DOOR OPENING OR CLOSING OPERATION
5	DRAG LINKS	ELEMENTS OF FOUR-BAR LINKAGE MECHANISM REQUIRED TO PLACE DOOR BEHIND PRESSURE STOPS. CAN BE ADJUSTED TO CHANGE DOOR VERTICAL POSITION
6	LATCH TORQUE TUBE	DRIVEN BY LATCH ACTUATOR, IT SERVES TO LEVER DOOR INTO OR OUT OF LATCHED POSITION BY MEANS OF CRANKS LOCATED AT FORE AND AFT ENDS. IT ALSO SEQUENCES LOCKUP OF LIFT AND PIVOT MECHANISM
7	ADJUSTING LINKS	PROVIDE FOR ADJUSTMENT OF INBOARD/OUTBOARD TILT OF DOOR RELATIVE TO FUSELAGE CONTOUR
8	LIFTING ARMS	PRIMARY DOOR SUPPORT, THEY SWING DOOR IN AN ARC INBOARD AND OUTBOARD
9	PRESSURE STOP ADJUSTING BOLTS	LOCATED IN EACH PRESSURE STOP FITTING, THEY PROVIDE FOR ADJUSTMENT OF CARGO DOOR RELATIVE TO FUSELAGE CONTOUR. PRESSURE STOP FITTINGS TRANSFER CABIN AIR PRESSURIZATION LOADS FROM DOOR TO FUSELAGE FRAMES
10	LATCH ACTUATOR	ROTATES LATCH TORQUE TUBE AND LATCH CRANKS TO LATCH OR UNLATCH DOOR, AND HOLDS DOOR IN PLUG POSITION
11	DOOR CLOSED POSITION SWITCH	SENSES DOOR CLOSED POSITION - CONTROLS POWER TO LATCH ACTUATOR TO MOVE DOOR TO LATCHED POSITION
12	LOWER HOOKS	WITH LOWER PIVOT AND BRACKET FITTINGS THEY FUNCTION AS PRESSURE STOPS TO SUPPORT LOWER END OF DOOR. TRANSFERS CABIN AIR PRESSURIZATION LOADS FROM DOOR TO FUSELAGE STRUCTURE
13	LATCH ACTUATOR DRIVE SHAFT	PROVIDES FOR MANUAL DRIVE OF LATCH ACTUATOR FROM OUTSIDE AIRCRAFT
14	LATCH ACTUATOR MANUAL DRIVE ACCESS DOOR	PROVIDES ACCESS TO LATCH ACTUATOR 1/2-INCH DRIVE RECEPTACLE ON DOOR

M1-0100-52-510

Cargo Door Identification Index
Figure 201 (Sheet 3)

ITEM NO.	NOMENCLATURE	PRIMARY FUNCTION
(15)	GUIDE ROLLER, LOWER	LOCATED ON FORWARD AND AFT ENDS OF DOOR TO SERVE AS GUIDES DURING MOVEMENT OF DOOR FROM DOOR CLOSED POSITION TO LATCHED POSITION
(16)	SEAL STRIKER	PROVIDES FLAT CONTACT SURFACE ON PERIMETER OF DOOR FOR ONE-PIECE DOOR SEAL ON DOOR SURROUND STRUCTURE TO MAINTAIN CABIN AIR PRESSURIZATION
(17)	FAIRING	SECTION OF MLG AERODYNAMIC FAIRING ATTACHED TO C-2 CARGO DOOR
(18)	DOOR UNLOCK SWITCH	MANUALLY OPERATED SWITCH USED TO ELECTRICALLY UNLOCK DOOR
(19)	LATCH CRANKS	LOCATED ON FORWARD AND AFT ENDS OF DOOR. LATCH CRANK ROLLERS ENGAGE LIFTING CAM FITTINGS ON DOOR SURROUND STRUCTURE, TO LOWER DOOR INTO LATCHED POSITION OR RAISE DOOR OUT OF LATCHED POSITION
(20)	DITCH STOPS	PREVENT DOOR FROM OPENING INBOARD UNDER NEGATIVE PRESSURE CONDITIONS
(21)	LOCK UP CAMS	USED TO IMMOBILIZE LIFT AND PIVOT MECHANISM DURING OPEN/CLOSE OPERATION - EXCEPT DURING LATCHING OR UNLATCHING OPERATION
(22)	GUIDE ROLLERS, UPPER	LOCATED ON FORWARD AND AFT ENDS OF DOOR - SEE ITEM (15)
(23)	ACTUATION CRANK ASSEMBLY	SERVES AS INPUT CRANK TO TORQUE TUBE AND LATCH CRANKS, ACTUATED BY LATCH ACTUATOR. INTERFACES WITH LEVER LOCKING LATCH IN LOCKED POSITION TO PREVENT DOOR UNLATCHING
(24)	LOCK ACTUATOR	ELECTRICALLY DRIVEN ACTUATOR - ACTUATES SAFETY STOP AND LEVER LOCKING LATCH TO LOCK DOOR IN LATCHED POSITION
(25)	SAFETY STOP PUSH-PULL CABLE	CABLE INTERCONNECT BETWEEN LOCK ACTUATOR AND SAFETY STOP
(26)	DOOR SEAL	MAINTAINS CABIN AIR PRESSURIZATION BY SEALING INTERFACE OF CARGO DOOR TO ITEM (16)
(27)	SAFETY STOP STRIKER	SERVES AS FIXED STRUCTURAL STOP ATTACHED TO SURROUND STRUCTURE UPPER SILL TO PREVENT UPWARD MOVEMENT OF DOOR
(28)	DOOR LIFT GEAR BOXES	ARE ROTARY HINGES DRIVEN BY THE LIFT ACTUATOR. THEY SUPPORT LIFTING ARMS AND DOORS WHICH ARE DRIVEN TO THE OPEN POSITION
(29)	FLOOR BEAM	BOTTOM SURFACE OF FLOOR BEAM SERVES AS A STRIKER FOR THE SAFETY STOP (ON THE C-2 DOOR ONLY)
(30)	STABILIZER LINKS	ONE ELEMENT OF FOUR-BAR LINKAGE TYPE MECHANISM THAT DETERMINES THE DOOR OPENING AND CLOSING GEOMETRY. INSTALLED WITH FIXED DIMENSION. NOT USUALLY ADJUSTED DURING RIGGING PROCEDURES

M1-0100-52-511

Cargo Door Identification Index
Figure 201 (Sheet 4)

ITEM NO.	NOMENCLATURE	PRIMARY FUNCTION
(15)	GUIDE ROLLER, LOWER	LOCATED ON FORWARD AND AFT ENDS OF DOOR TO SERVE AS GUIDES DURING MOVEMENT OF DOOR FROM DOOR CLOSED POSITION TO LATCHED POSITION
(16)	SEAL STRIKER	PROVIDES FLAT CONTACT SURFACE ON PERIMETER OF DOOR FOR ONE-PIECE DOOR SEAL ON DOOR SURROUND STRUCTURE TO MAINTAIN CABIN AIR PRESSURIZATION
(17)	FAIRING	SECTION OF MLG AERODYNAMIC FAIRING ATTACHED TO C-2 CARGO DOOR
(18)	DOOR UNLOCK SWITCH	MANUALLY OPERATED SWITCH USED TO ELECTRICALLY UNLOCK DOOR
(19)	LATCH CRANKS	LOCATED ON FORWARD AND AFT ENDS OF DOOR. LATCH CRANK ROLLERS ENGAGE LIFTING CAM FITTINGS ON DOOR SURROUND STRUCTURE, TO LOWER DOOR INTO LATCHED POSITION OR RAISE DOOR OUT OF LATCHED POSITION
(20)	DITCH STOPS	PREVENT DOOR FROM OPENING INBOARD UNDER NEGATIVE PRESSURE CONDITIONS
(21)	LOCK UP CAMS	USED TO IMMOBILIZE LIFT AND PIVOT MECHANISM DURING OPEN/CLOSE OPERATION - EXCEPT DURING LATCHING OR UNLATCHING OPERATION
(22)	GUIDE ROLLERS, UPPER	LOCATED ON FORWARD AND AFT ENDS OF DOOR - SEE ITEM (15)
(23)	ACTUATION CRANK ASSEMBLY	SERVES AS INPUT CRANK TO TORQUE TUBE AND LATCH CRANKS ACTUATED BY LATCH ACTUATOR. INTERFACES WITH LEVER LOCKING LATCH IN LOCKED POSITION TO PREVENT DOOR UNLATCHING
(24)	LOCK ACTUATOR	ELECTRICALLY DRIVEN ACTUATOR - ACTUATES SAFETY STOP AND LEVER LOCKING LATCH TO LOCK DOOR IN LATCHED POSITION
(25)	SAFETY STOP PUSHROD	PUSHROD INTERCONNECT BETWEEN LOCK ACTUATOR AND SAFETY STOP
(26)	DOOR SEAL	MAINTAINS CABIN AIR PRESSURIZATION BY SEALING INTERFACE OF CARGO DOOR TO ITEM (16)
(28)	DOOR LIFT GEAR BOXES	ARE ROTARY HINGES DRIVEN BY THE LIFT ACTUATOR. THEY SUPPORT LIFTING ARMS AND DOORS WHICH ARE DRIVEN TO THE OPEN POSITION
(29)	FLOOR BEAM	BOTTOM SURFACE OF FLOOR BEAM SERVES AS A STRIKER FOR THE SAFETY STOP (ON THE C-2 DOOR ONLY)
(30)	STABILIZER LINKS	ONE ELEMENT OF FOUR-BAR LINKAGE TYPE MECHANISM THAT DETERMINES THE DOOR OPENING AND CLOSING GEOMETRY. INSTALLED WITH FIXED DIMENSION. NOT USUALLY ADJUSTED DURING RIGGING PROCEDURES

M1-0001 52-712

Cargo Door Identification Index
Figure 201 (Sheet 4)

ITEM NO.	NOMENCLATURE	PRIMARY FUNCTION
(31)	DOOR UNLOCK HANDLE	LOCATED ON OUTSIDE OF DOOR - OPERATES DOOR UNLOCK SWITCH
(32)	RIG LINKS	USED TO ADJUST CLEARANCE BETWEEN THE LOCK UP LINK ROLLER AND THE LOCK UP CAM ON THE TORQUE TUBE
(33)	LOCK ACTUATOR INDICATING (GREEN) LIGHT	LIGHT COMES ON WHEN LOCK ACTUATED. USED AS AID TO DOOR CLOSING PERSONNEL. NOT VALID AS DOOR LOCKED INDICATION
(34)	COUPLINGS	USED TO LOCK LIFT ACTUATOR TORQUE SHAFTS TO LIFT ACTUATOR WHEN ENGAGED WITH GEARBOXES
(35)	TORQUE SHAFTS	SERVE AS DRIVE SHAFTS FROM LIFT ACTUATOR TO GEARBOXES TO RAISE OR LOWER DOOR
(36)	LIFT ACTUATOR	ATTACHED TO STRUCTURE ABOVE EACH DOOR. IT ACTUATES DOOR TO THE OPEN AND CLOSED POSITIONS
(37)	RIGHT-ANGLE DRIVE GEARBOXES	PROVIDES TORQUE OVERLOAD PROTECTION FOR MANUAL DRIVE INPUT THROUGH FLEX SHAFT TO DRIVE LIFT ACTUATOR
(38)	MANUAL DRIVE FLEX SHAFT	PROVIDE INPUT FROM RIGHT-ANGLE DRIVE GEARBOX TO LIFT ACTUATOR
(39)	DOOR SURROUND STRUCTURE	TYPICALLY CONSISTS OF FORWARD AND AFT DOOR FRAMES, UPPER AND LOWER SILLS. THE FORWARD AND AFT FRAMES INCLUDE PRESSURE STOP, ROLLER GUIDE, AND LIFTING CAM FITTINGS. THE UPPER AND LOWER SILLS INCLUDE THE PRESSURE STOP PIVOTS AND BRACKETS THAT ARE ENGAGED BY THE DOOR UPPER AND LOWER HOOKS IN THE DOOR LATCHED POSITION
(40)	LIFT ACTUATOR UPLOCK RELEASE PUSH-PULL CABLE NOTE: REMOVED BY SB52-094	ACTUATED BY ACTUATION SWITCH BOX DOOR (WHEN DEPRESSED) TO RELEASE LIFT ACTUATOR UPLOCK PAWL
(41)	ACTUATION SWITCHBOX DOOR	TWO TYPES: • ONE PIECE DOOR • TWO PIECE DOOR BOTH HAVE PIVOTED ARMS TO ACTUATE LIFT ACTUATOR UPLOCK RELEASE PUSH-PULL CABLE (UNLESS REMOVED) • ONE PIECE DOOR PROVIDES ACCESS TO DOOR ACTUATION TOGGLE SWITCH • TWO PIECE DOORS OPERATE DOOR OPEN, OR DOOR CLOSE SWITCHES
(42)	PROXIMITY SENSOR	SERVES WITH THE PROXIMITY SENSOR TARGET AS A SWITCH IN THE CARGO DOOR WARNING LIGHT CIRCUIT TO PROVIDE DOOR LOCKED INDICATIONS IN THE FLIGHT STATION

M1-0000-52-883

R
R

Cargo Door Identification Index
Figure 201 (Sheet 5)

EFFECTIVITY: ALL

0018

PREPARATION FOR CARGO DOOR RIGGING - INSPECTION AND CHECK

1. General

The procedures here are identical for each cargo door except as noted.

WARNING: CARE MUST BE EXERCISED WHILE MAINTENANCE IS PERFORMED ON CARGO DOOR WITH ELECTRICAL POWER ON DOOR OPERATING CIRCUITS.

WHEN WORKMEN ARE STATIONED INSIDE A CLOSED CARGO COMPARTMENT AN ASSISTANT SHOULD BE STATIONED OUTSIDE EQUIPPED TO MANUALLY OPEN DOOR IF NECESSARY.

2. Equipment and Materials

All special tools required for cargo door rigging and adjustment procedures are listed below. In some cases drawings are included so that tools can be locally fabricated if desired.

C TWA Tool Kit 52-30-00-0013-1

Lower Hook Engagement Tool, EL295E5-1 DETAIL-101, or equivalent [(For use on C-1 Door) Ref. Fig. 601 (Sheet 1)]

R Lower Hook Engagement Tool, EL 295E5-1 DETAIL-102, or equivalent
R [(For use on C-3 Door) Ref. Fig. 601 (Sheet 1)]

Upper Hook Overlap Check Tool, 1566156-901 SUT, or equivalent [Ref. Fig. 601 (Sheet 1)]

Feeler Gage, EL 705F10-26, or equivalent [Ref. Fig. 601 (Sheet 2)]

Door Wedges [Ref. Fig. 601 (Sheet 1)]

NOTE: The above tools are included in special tool kit 1606738-101 provided with Service Bulletin 52-086.

Rig Pin Tool, 1566156-915, or equivalent [Ref. Fig. 601 (Sheet 3)]

Pressure Stop Feeler Gage Set - 1566156 CF-901 THRU 913 [Ref. Fig. 601 (Sheet 3)]

Lock-wire, Fed Spec QQ-W-390, 0.030-inch diameter, or equivalent

Pry-bar, wood, approximately 2 by 4 by 36 inch, or equivalent

Sealing Compound, Products Research Corp. PR7401K (LCM40-2180 Type II), or equivalent

3. Referenced Procedures

23-43-00	Service Interphone System - Maintenance Practices
24-41-00	External Power/Ground Service System - Maintenance Practices
52-31-05	Door Seal - Removal and Installation

4. Inspection/Check

A. Preparation For Door Electrical Operation

(1) Turn on electrical power (Ref. 24-41-00).

(2) For door operation from within forward and aft cargo compartments interphone communication may be established between persons inside and outside of cargo compartment (Ref. 23-43-00).

(3) On pilots overhead circuit breaker panel (CB1, zone 210, verify that circuit breakers LAND GEAR - PROX SW PWR - NO. 1 (L10) and LANDING GEAR - PROX SW PWR - NO. 4 (L11) are closed.

On Flight Engineer/Second Officers overhead circuit breaker panel CB2, zone 215, verify that circuit breaker MLG - GND - SENSE (L8) is closed.

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, verify that circuit breakers PROXIMITY SWITCH - 2 (H3), PROXIMITY SWITCH - 3 (H4), and DOOR - WARN - LTS (H2) are closed.

R (4) On galley left circuit breaker panel, zone 131, verify
R circuit breaker CARGO DOOR-AIR-GND SENSE PWR (C-22) and
R applicable cargo door circuit cargo door circuit
R breakers ACTUATOR, CONTROL, and LIGHTING are closed.

(5) With electrical power on aircraft, circuit breakers
R closed, and all cargo doors closed and locked, affected CARGO lights on the Flight Engineer/Second Officers annunciator panel should be off. The LOCK ACTUATOR INDICATING LIGHT on each cargo door should be on.

R CAUTION: DOOR OPERATION IS LIMITED TO FOUR COMPLETE OPEN/CLOSE CYCLES WITHOUT PAUSE. AFTER THE FOURTH SUCH CYCLE, LIFT ACTUATOR SHOULD BE ALLOWED TO COOL FOR TWENTY MINUTES BEFORE RECYCLING DOOR.

B. Door Surround Structure Cleanness Check

(1) Remove all compacted or loose debris from sill area including forward and aft corners. Remove dirt or debris from areas above and below door lower pressure seal and retainer, and from lower pressure stop brackets.

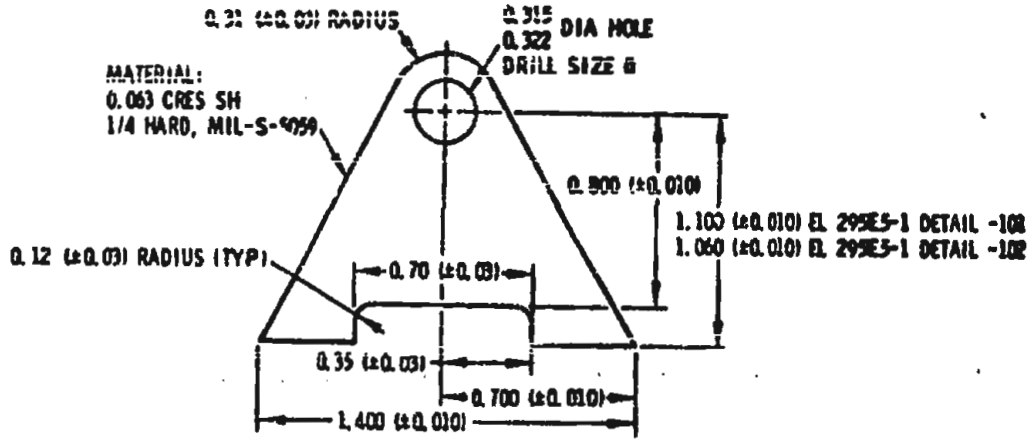
(2) Clean out sill area drain holes.

(3) Clean out upper and lower roller guides and lifting cam on door surround structure.

C. Pressure Seal Check

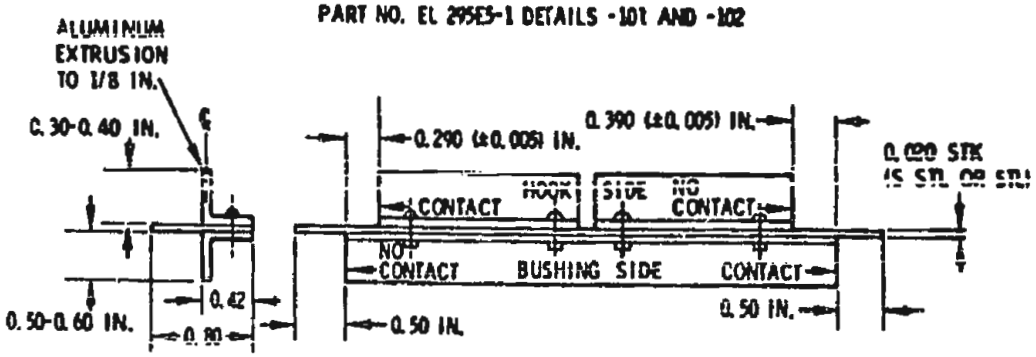
(1) Check pressure seal and seal retainer all around door opening for misalignment or other damage and make corrections as necessary (Ref. 52-31-05).

NOTE: Seal misalignment (waviness) can cause door to hang up during closing operation. A seal retainer displaced outboard may physically prevent a door from latching fully, and can cause pressurization leaks.



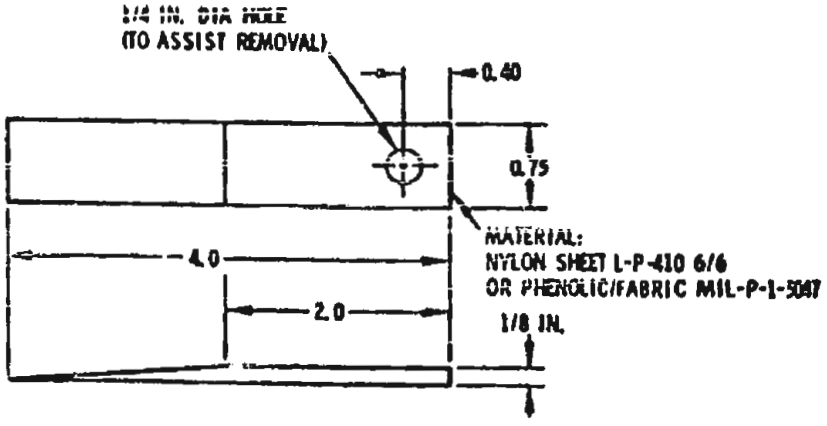
LOWER HOOK ENGAGEMENT TOOLS

PART NO. EL 295E5-1 DETAILS -101 AND -102



UPPER HOOK OVERLAP CHECK TOOL

PART NO. 1566156-901 SUT



DOOR WEDGE

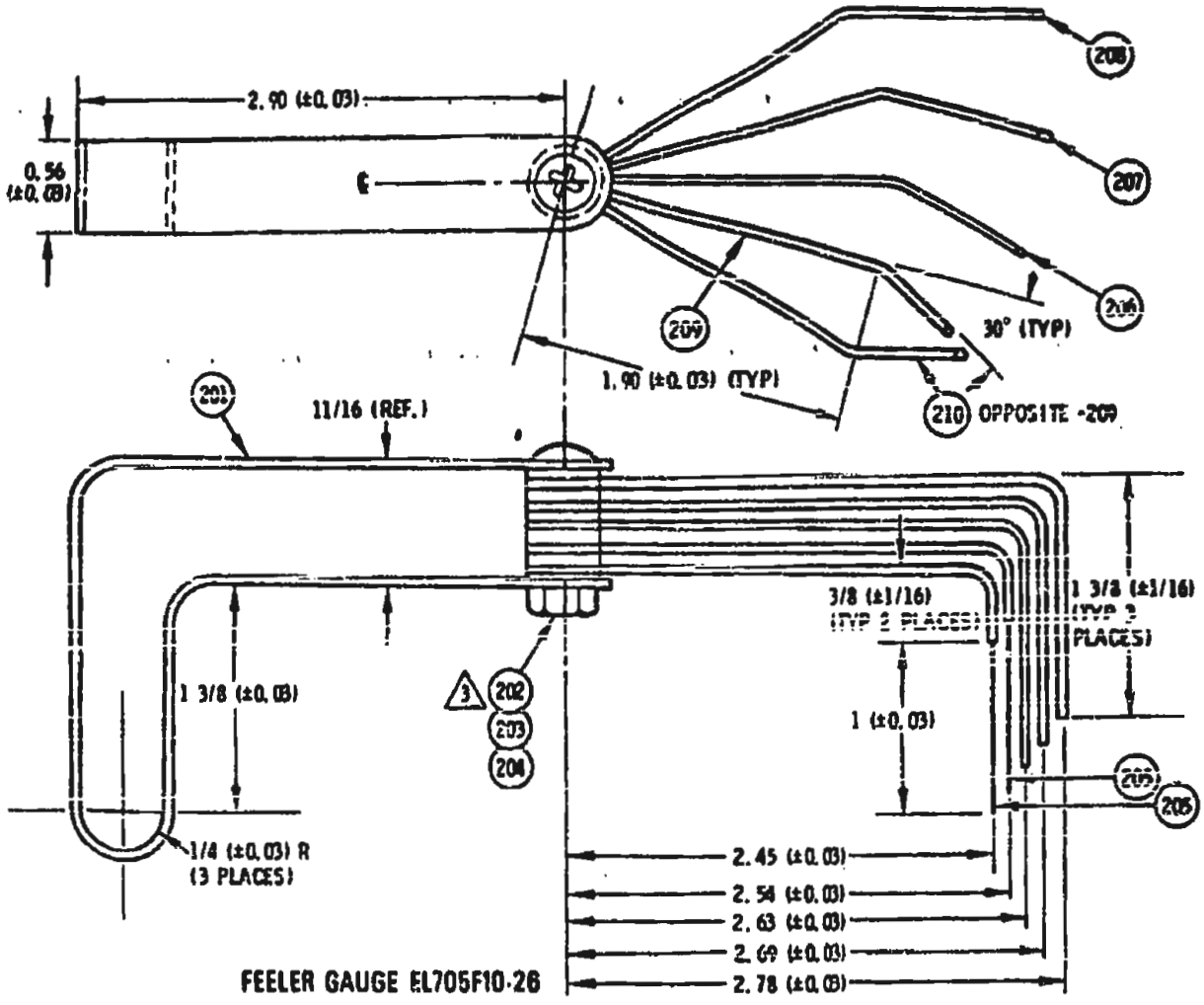
NOTE

1 ALL DIMENSIONS ARE IN INCHES

M1-0101-52-323

R
R

Cargo Door Adjustment Tools
Figure 601 (Sheet 1)



NOTE

1. BREAK UNNECESSARY SHARP EDGES
2. ALL DIMENSIONS IN INCHES
3. PEEN END TO LOCK AFTER ADJUSTMENT

DET. NO.	SIZE	MATERIAL	NO. REQ
201	0.04 x 9/16 x 12	2024-T6 AL	1
202	0.1900 -32 UNJF-3A x 7/8 LG	NAS603-14P BOLT	1
203	13/64 x 7/16 x 0.063	AN960C10 WASHER	11
204	0.1900 -32	NAS509-3C NUT	1
205	0.010 DIA x 1 1/2	PIANO WIRE	2
206	0.032 x 4 IN. LG	PIANO WIRE	1
207	0.072 DIA x 4 IN. LG	PIANO WIRE	1
208	0.095 DIA x 4 IN. LG	PIANO WIRE	1
209	0.042 O.D. x 0.012 WALL x 3 1/2 IN. LG	ROUND CRES STL TUBING	1
210	0.042 O.D. x 0.012 WALL x 3 1/2 IN. LG	ROUND CRES STL TUBING	1

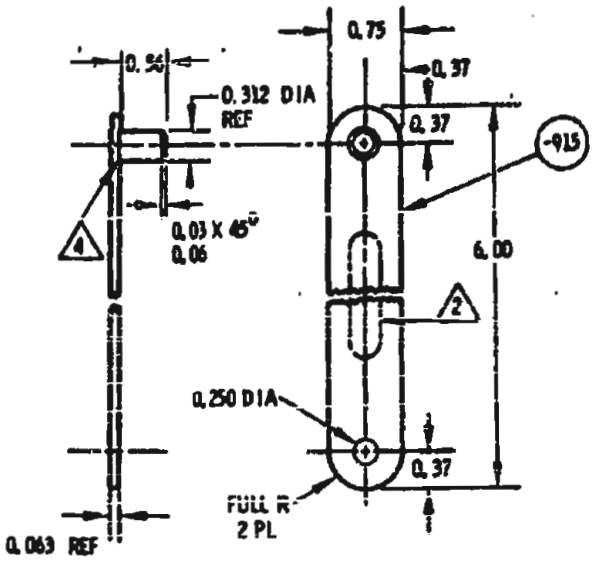
M1-0100-52-324

R R

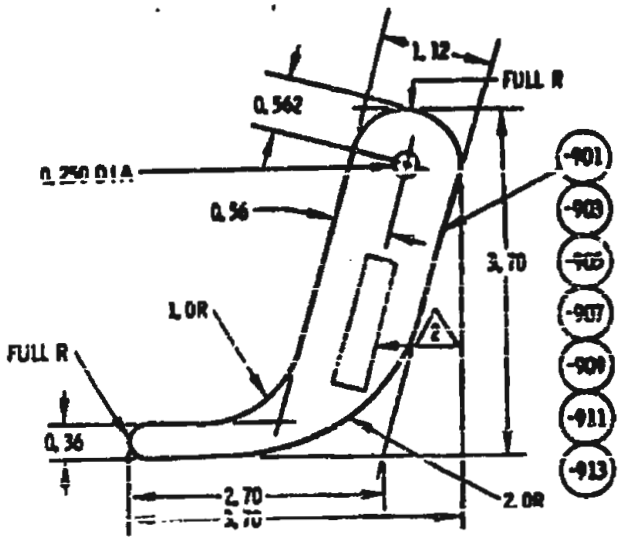
Cargo Door Adjustment Tools
Figure 601 (Sheet 2)

EFFECTIVITY: ALL

0018



RIGPIN TOOL
1566156 CF -915 (1)



PRESSURE STOP
FEELER GAGE SET
156615CF - 901 THROUGH 913 (1) (3)

NOTE

(1) FASTEN TOGETHER AS A SET - METHOD OPTIONAL HOWEVER, MUST PERMIT REMOVAL OF INDIVIDUAL GAGES.

(2) PERMANENT MARK IDENTITY AND GAGE THICKNESS - METHOD AND SIZE OPTIONAL.

(3) FOUR FEELER GAGE SETS REQUIRED TO RIG DOOR.

(4) FUSION WELD

(5) ALL DIMENSIONS ARE IN INCHES

DET. NO.	ITEM :	SIZE (5)	MATERIAL	NO. REQ.
-901	GAGE	.005 X 4 X4	301 CRES SH, MIL-S-5059 FULL HARD	1
-903	GAGE	.012 X4 X4	301 CRES SH, MIL-S-5059 FULL HARD	1
-905	GAGE	.016 X4 X4	301 CRES SH, MIL-S-5059 FULL HARD	1
-907	GAGE	.032 X4 X4	301 CRES SH, MIL-S-5059 FULL HARD	1
-909	GAGE	.063 X4 X4	301 CRES SH, MIL-S-5059 FULL HARD	1
-911	GAGE	.090 X4 X4	301 CRES SH, MIL-S-5059 FULL HARD	1
-913	GAGE	.125 X4 X4	301 CRES SH, MIL-S-5059 FULL HARD	1
-915	TOOL	.312 DIA	321 BAR QQ-S-763 CL 321 COND. H	1
		.063 X6 X3/4	321 SHT. MIL-S-6721 COMP T1	1

M1-0100-52-460

R
R

Cargo Door Adjustment Tools
Figure 601 (Sheet 3)

EFFECTIVITY: ALL

0018

CARGO DOOR CLOSING CHECK - ADJUSTMENT AND TEST

1. General

This procedure is intended to identify cargo door closing faults and describe the steps required to correct them. When the door is properly seated it will be ready to cycle into the door latching sequence.

By definition, a door is technically "closed" (not latched) when the door forward and aft upper guide rollers are located at the upper inboard end of the upper roller guides with a clearance of 0.000 to 0.040 inch between roller and guide fitting. At the same time the door forward and aft lower guide rollers are contacting the upper inboard ends of the lower guide fittings.

2. Referenced Procedures

52-30-01	Preparation for Cargo Door Rigging
52-30-07	Cargo Door Latching Check
52-30-31	Cargo Door Completion Check

3. Adjustment/Test

A. Preparation for Check

Verify that door surround structure area is clean and ready for check (Ref. 52-30-01, Para. 4B and 4C).

B. Door Guide Roller Entry Check

(1) Station workman inside of cargo compartment to observe door operation.

R WARNING: CARE MUST BE EXERCISED WHILE MAINTENANCE IS PERFORMED ON THE CARGO DOOR WITH ELECTRICAL POWER IN THE DOOR OPERATING CIRCUITS.

R CAUTION: WHEN ALIGNING CARGO DOOR WITH DOOR OPENING, CHECK THAT ANY INTERFERENCE IS CORRECTED BEFORE CONTINUING WITH DOOR CLOSING OPERATION.

(2) Electrically or manually move door in closing direction until door guide upper rollers and door latch crank rollers almost enter roller guides and door lifting cam

guides on forward and aft sides of the door surround structure.

(3) Check position of door upper and lower guide rollers relative to upper and lower guide fittings (Ref. Fig. 501). If the rollers are in position to enter roller guides, continue door movement inboard, if not, correct door roller position by adjusting drag link turnbuckles (Ref. Para. C).

(4) Electrically or manually move door inboard until upper and lower door guide rollers are at full inboard position (closed but not latched) (Ref. Fig. 502).

NOTE: When operating door electrically, release door control switch when the sound of the rotary actuator relay located above the door is heard.

(5) With door guide rollers at full inboard position (before start of latching cycle), verify that door guide rollers are positioned as follows (Ref. Fig. 502).

(a) One lower roller is bearing at upper inboard corner of roller guide fitting and cannot be turned with light finger pressure. Other lower roller is contacting roller guide or within 0.06 inch of contact.

(b) Both upper rollers can be turned freely by light finger pressure, and are within referenced tolerances.

(6) If up-down roller adjustments are necessary adjust drag link turnbuckles as required, (Ref. Para. C).

(7) If inboard-outboard corrective adjustment of door rollers is required, adjust the adjusting link turnbuckles as necessary (Ref. Para. D).

(8) When door rollers are properly adjusted, operate door to latched position. Refer to 52-30-07 for Cargo Door Latching Check, or Adjustment.

(9) If door operates normally to closed and open positions perform Cargo Door Completion Check (Ref. 52-30-31).

C. Drag Link Adjustment (Roller-to-Guide Vertical Alignment)

(1) Adjust drag link turnbuckles when one or more of the following conditions are found:

NOTE: Drag links can only be adjusted when the door is open (out of plug position).

Adjust drag link in small increments (one-half to one full turn at a time). Adjustment of the drag link does not change the tangential (up-down) position of the door pressure stop bolts relative to the surround structure pressure stops when the door is in the latched (plug) position.

(a) When rollers do not enter guides smoothly, shorten drag link to raise rollers; lengthen drag link to lower roller (Ref. Fig. 503).

(b) When door pressure stop bolts drag on surround structure pressure stops as door swings into fuselage, adjust drag links as required to clear pressure stops.

D. Adjusting Link Adjustment (Roller-to-Guide Inboard/Outboard Alignment)

(1) Adjust the adjusting link turnbuckles when upper door rollers contact the inboard surface of the roller guides before the lower rollers contact the lower roller guides as follows:

(a) To move upper door rollers outboard, shorten the adjusting link (Ref. Fig. 502).

(b) To move the upper door rollers inboard, lengthen the adjusting link.

(c) Adjust the adjusting link in small increments (one-half turn at a time).

NOTE: There is a reaction between the drag link rod and the adjusting link rod. The drag link may have to be readjusted after the adjusting link rod length is changed.

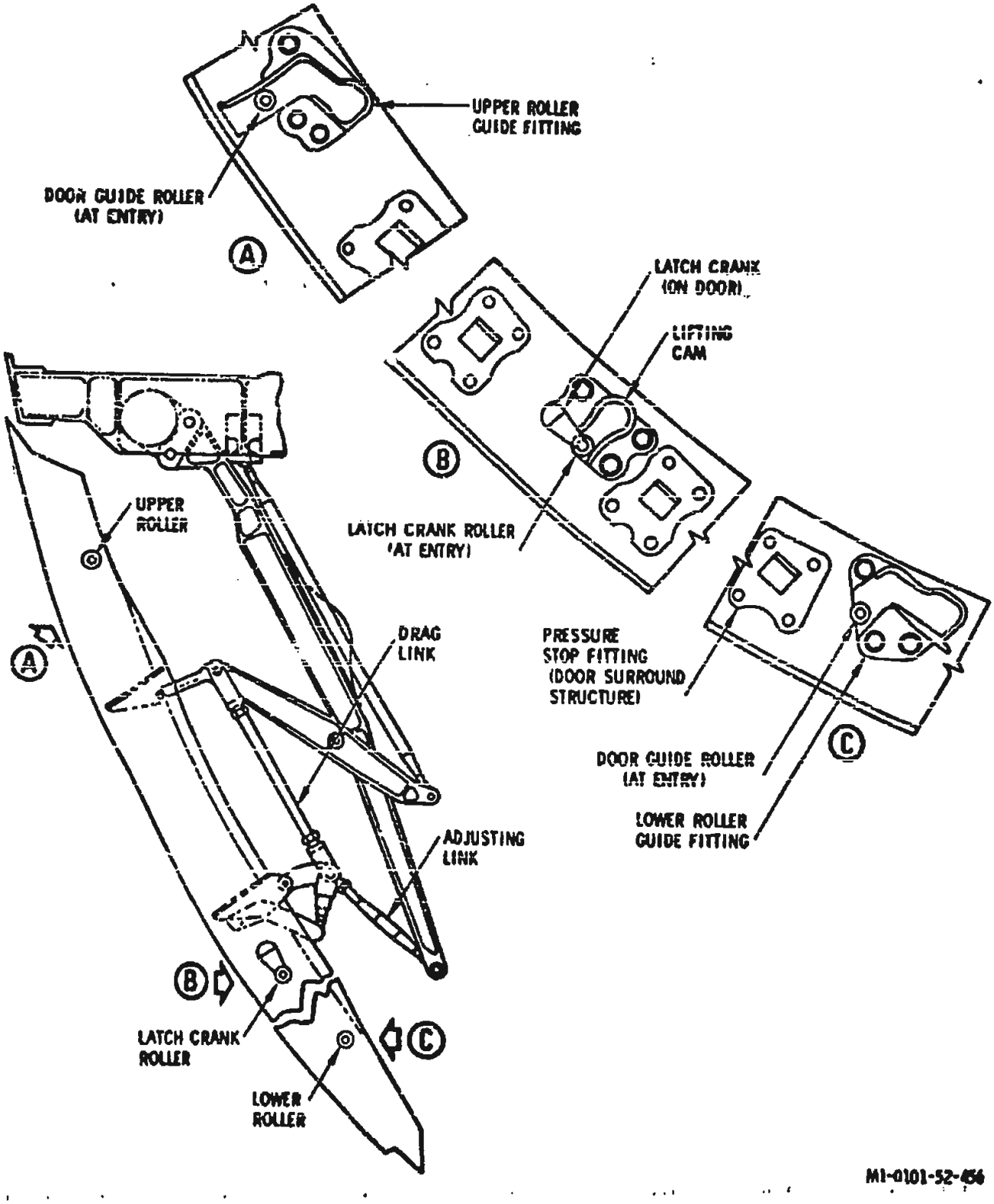
E. Rig Link Adjustments

(1) The rig links may be used to advantage when one of the following special conditions is encountered (Ref. Fig. 503):

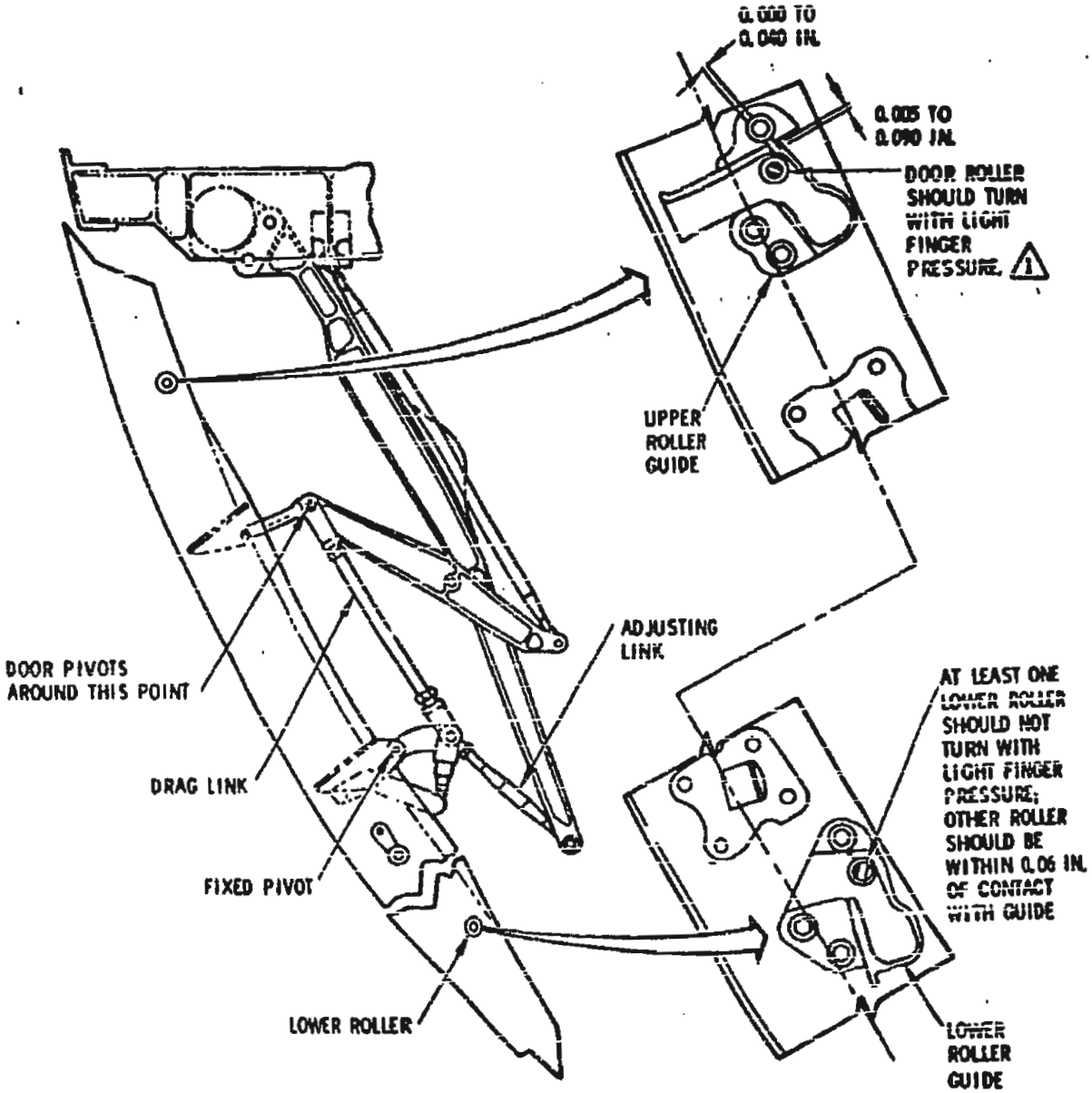
(a) A drag link is adjusted to its limit.

(b) To raise or lower door 0.06 inch or less for clean entry into roller guides when door tilt angle

(adjusting link rod) is correct and drag link rods are lock-wired.



R
R Door Closing - Guide Roller Check
Figure 501


0.000 TO
0.040 IN.
0.005 TO
0.090 IN.
DOOR ROLLER SHOULD TURN WITH LIGHT FINGER PRESSURE. 1
UPPER ROLLER GUIDE
ADJUSTING LINK
DOOR PIVOTS AROUND THIS POINT
DRAG LINK
FIXED PIVOT
LOWER ROLLER
AT LEAST ONE LOWER ROLLER SHOULD NOT TURN WITH LIGHT FINGER PRESSURE; OTHER ROLLER SHOULD BE WITHIN 0.06 IN. OF CONTACT WITH GUIDE
LOWER ROLLER GUIDE

1 DOOR ROLLERS SHOWN IN CLOSED, UNLATCHED POSITION

2 THERE IS A REACTION BETWEEN DRAG LINK RODS AND ADJUSTING LINK RODS. IF ONE IS ADJUSTED, RECHECK AND ADJUST THE OTHER AS REQUIRED.

DOOR ADJUSTMENT COMPONENT	SHORTEN	LENGTHEN	EFFECT ON DOOR
ADJUSTING LINK ROD(S)	X		MOVES TOP OF DOOR OUTBOARD 2
		X	MOVES TOP OF DOOR INBOARD 2

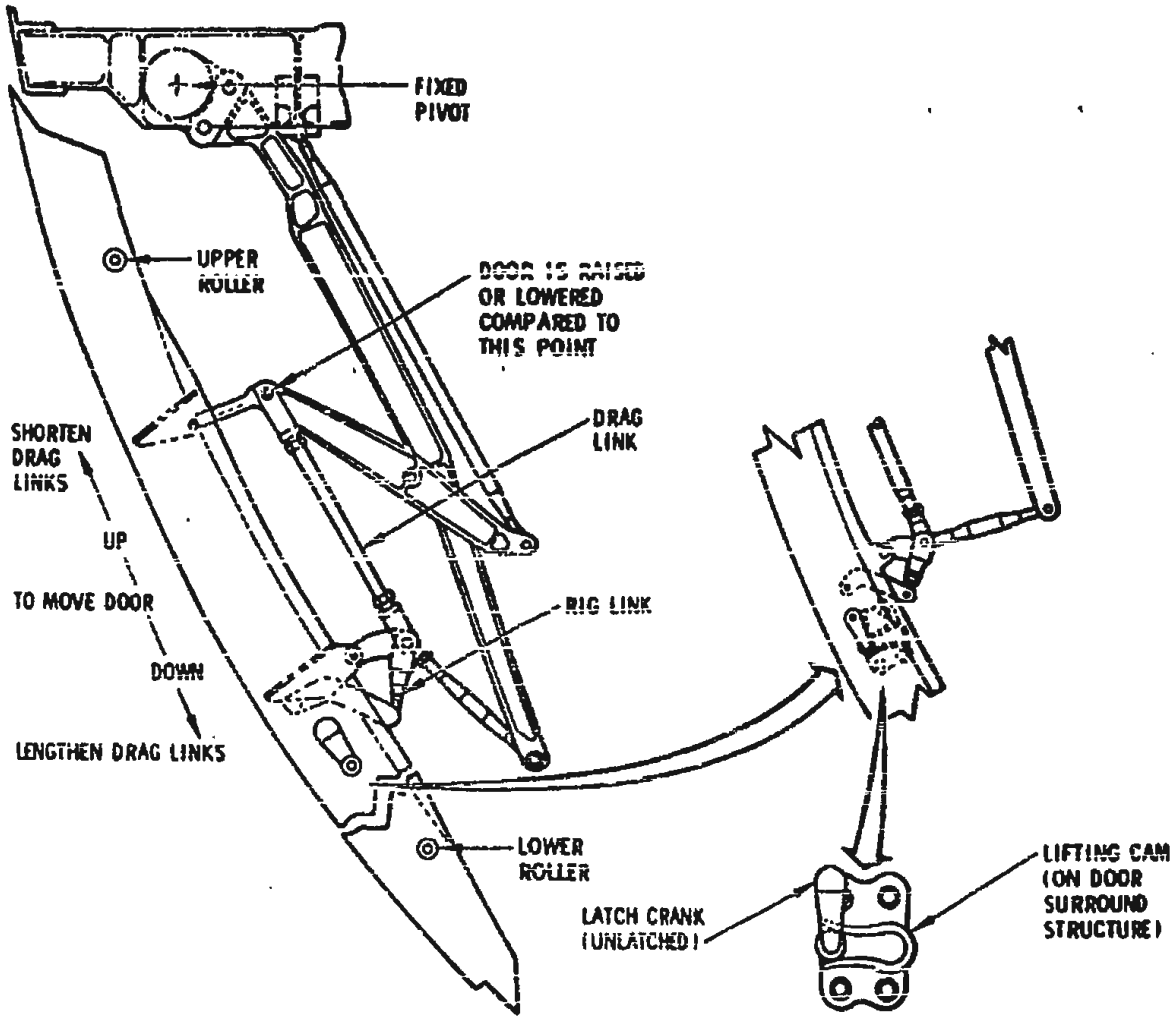
M1-0101-52-458

Adjusting Link Adjustments
Figure 502

R
R

EFFECTIVITY: ALL

001B



NOTE

1. MOVEMENT RELATIVE TO ROLLER GUIDE FITTINGS ON DOOR SURROUND STRUCTURE
2. THERE IS A REACTION BETWEEN DRAG LINK RODS AND ADJUSTING LINK RODS. IF ONE IS ADJUSTED, RECHECK AND ADJUST THE OTHER AS REQUIRED.
3. THIS ADJUSTMENT MAY BE USED WHEN ONE OR MORE OF THE FOLLOWING CONDITIONS IS ENCOUNTERED:
   A. DRAG LINKS ADJUSTED TO LIMIT
   B. TO RAISE OR LOWER DOOR 0.06 INCH OR LESS FOR CLEAN ENTRY INTO ROLLER GUIDES WHEN DOOR TILT ANGLE (ADJUSTING LINK ROD) IS CORRECT AND DRAG LINK RODS ARE LOCK-WIRED

DOOR ADJUSTMENT COMPONENT	SHORTEN	LENGTHEN	EFFECT ON DOOR
DRAG LINK ROD(S)	X		RAISES DOOR (ROLLERS) 1 2
		X	LOWERS DOOR (ROLLERS) 1 2
DOOR RIG LINK(S)	X		RAISES DOOR (ROLLERS) 1 3
		X	LOWERS DOOR (ROLLERS) 1 3

M1-0101-52-457

R
R

Drag Link Adjustments
Figure 503

EFFECTIVITY: ALL

0018

CARGO DOOR LATCHING - ADJUSTMENT AND TEST

1. General

This procedure is intended to identify cargo door latching faults and provide the steps required to correct them. After the door is adjusted to the latched position, the door closed limit switch, pressure stop adjusting bolts, upper and lower hooks, and lifting cam fittings must be checked to verify that adjustments are within recommended tolerances.

By definition, the door is technically latched when the centerline of the door pressure stop adjustment bolts fall within an area on each wear pad as illustrated in Figure 501 for the C-1, C-2, and C-3 Cargo doors.

The door is latched when the door has lowered into the door sill and the door mounted pressure stop adjusting bolts line up to the inside of, and are centered on, the surround structure mounted wear pads. From the outside, a door should appear to be centered in the door opening and the door surface flush with the surrounding fuselage skin.

2. Equipmet and Materials

R Compound, Sealing and Retaining, single component metal activated, MIL-S-22473D, Loctite Corp, or equivalent

Cleaner, O-T-620, or equivalent

Cloth, clean dry, wiping

Sealing Compound, LCM40-1218, Type I, Products Research Co. PR5601-K, or equivalent

3. Referenced Procedures

52-30-01	Preparation for Cargo Door Rigging - Inspection and Check
52-30-04	Cargo Door Closing Check - Adjustment and Test
52-30-13	Cargo Door Pressure Stop Bolt and Hook - Adjustment and Test
52-30-19	Cargo Door Safety Stop - Adjustment and Test
52-30-31	Cargo Door Maintenance Completion - Inspection and

Check

52-31-08 Cargo Door Latching Actuator - Removal and Installation

R 4. Adjustment/Test

A. Preparation for Check

(1) Verify that door surround structure area is clean and ready for latching check (Ref. 52-30-01, Para. 4B and 4C).

(2) Turn on electrical power if door is to be operated electrically (Ref. 52-30-01).

B. Latch Crank Rigging Verification

NOTE: This procedure requires at least two workmen.

(1) Operate door to partially open position with door hanging vertically down.

(2) Peel up lower edge of upper insulation blanket on inside of door for access to torque tube and upper end of latch actuator.

WARNING: KEEP DOOR PATH CLEAR OF EQUIPMENT AND PERSONNEL DURING ACTUATOR CYCLING PROCEDURES.

(3) At lower aft corner of door, rotate the closed door position limit switch roller arm in an outboard direction and hold in this position while another workman performs the following:

CAUTION: EXPECT DOOR TO SAG APPROXIMATELY 1 1/2 INCHES DURING CYCLING OF LATCH ACTUATOR.

WARNING: DO NOT RELEASE DOOR CLOSED LIMIT SWITCH ROLLER ARM UNTIL LATCH ACTUATOR AND LOCK ACTUATOR HAVE COMPLETELY CYCLED AND STOPPED. RELEASING LIMIT SWITCH ROLLER ARM IN MID-CYCLE WILL RESULT IN CARGO DOOR SWINGING INBOARD.

(a) At external actuation switchbox, press actuation switch in closed direction and hold until the latch actuator and then the lock actuator have completed their sequenced operation, then release switch.

(b) Release closed door limit switch roller arm.

CAUTION: DO NOT ATTEMPT TO RAISE DOOR TO FULL OPEN POSITION OR TO CLOSE DOOR WITH ACTUATORS IN THIS "FALSE-LATCHED" CONDITION. EXTENDED SAFETY STOP COULD BE DAMAGED OR CAUSE DAMAGE.

(c) Verify that clearance between the latch actuation crank and the adjacent stopbolt is 0.025 to 0.035 inch.

NOTE: Do not adjust stop bolt to meet the required dimensions in this procedure. Stop bolt has been factory set and should not be tampered with unless verified to be out of adjustment by latch actuator rigging check (Ref. 52-31-08).

(d) With actuation crank to stop bolt clearance within tolerance, verify that clearance between aft torque tube latch crank roller and the adjacent clip on the door frame is 0.750 (±0.010) inch (Ref. Fig. 504). If these clearances are not met, latch actuator may require rerigging (Ref. 52-31-08).

R (4) Restore door to normal open condition as follows:

(a) Rotate the Cargo door unlock switch on the outside face of the door in a counterclockwise direction and hold until the lock actuator cycles and turns itself off. Then release the switch.

CAUTION: IF ACTUATOR STALLS OR CLUTCH SLIPS DURING THE FOLLOWING ACTUATION, DOOR SHOULD BE MANUALLY LIFTED TO ASSIST ACTUATOR.

(b) On C-1 and C-2 door:
at external door actuation switchbox, hold door actuation switch in open direction until door swings approximately two feet in the open direction.

(b) On C-3 door:
at external door actuation switchbox, hold door actuation switch in open direction while manually lifting and swinging the lower edge of the door aft and upward until door swings approximately two feet in open direction.

NOTE: The cargo door is now resequenced and may be operated normally.

C. Latching Check

(1) Station workman inside of cargo compartment to observe door operation.

WARNING: CARE MUST BE EXERCISED WHILE MAINTENANCE IS PERFORMED ON CARGO DOOR WITH ELECTRICAL POWER ON DOOR OPERATING CIRCUIT.

(2) Operate door to closed (not latched) position (Ref. Fig. 502). Verify that door rollers are positioned and that they react to light finger pressure as described. If not, door roller position should be corrected before continuing (Ref. 52-30-04).

(3) Actuate door to latched position (Ref. Fig. 503). If interference between door structure and door surround structure is observed note location of interference and correct as follows:

(a) To relieve interference between a pressure stop adjusting bolt and a pressure stop pad, remove wire lock and back off bolt until interference is cleared.

NOTE: If interference is observed at more than two adjacent bolts, or at any of the four corner adjustment bolts, door may not be adjusted properly in the door closed position, correct before continuing (Ref. 52-30-04).

(b) If interference is detected between ditch stops and door surround pressure stops, door is rigged too far inboard (door rollers bearing hard on inboard surface of roller guide fittings). To correct, readjust door in closed position (Ref. 52-30-04).

R (c) If interference is caused by loose or misaligned
R pressure stop wear pads, remove pad and reinstall
R as follows:

R NOTE: This procedure should also be performed
R when replacing a damaged or missing stop
R pad.

R • Clean door pressure stop fitting, wear pad,
R and pad attachment screw with cleaner; dry
R with clean cloth and let parts air dry for ten
R minutes prior to assembly.

R • Using Loctite, coat wear pad shank, female
R threads, underside of pad head, and inside of
R pressure stop fitting hole, then install pad.

R • Using Loctite, coat pad attachment screw
R threads, and under screw head, then install
R screw in wear pad shank.

R • Wipe wear pad and pressure stop free of
R residual Loctite.

R • Apply sealant fillet around periphery of
R wear pad where it interfaces pressure stop
R fitting (Ref. Fig. 505).

(4) With door in latched position, check for vertical (up-down) centering of door on pressure stop pads as follows (Ref. Fig. 503).

(a) Check that door pressure stop adjustment bolts are centered within ±0.090 inch on the fore and aft pressure stop pads at door beams No. 4 and 5. If door is within tolerance, continue rigging procedure with Step (5).

(b) If pressure stop adjustment bolts are not centered as specified in Step (a), pencil mark forward and aft lifting cam guides and adjacent serrated back-up plate for reference.

NOTE: Before proceeding with any effort to lower a cargo door relative to cargo door pressure stop pad centerline position, perform the following check.

(c) With door closed, latched, and locked, insert thin metal scale, or thin sheet metal equivalent (0.015 to 0.025-inch thick) between door seal and seal striker at bottom of door. Draw metal scale back and forth from front to rear. If scale will not slide freely do not attempt to lower door further. If door must be rigged lower, seal striker must be relocated lower in sill area. If scale slides freely as described above continue with Step (d).

(d) Electrically or manually unlatch door and move door out for access to lifting cam guide attach bolts. Loosen bolts and reposition door lifting cam guides as required. After repositioning lifting cam guides tighten inboard bolts.

NOTE: Each serration on lifting cam guide will result in an approximate 0.030 inch vertical movement of door relative to door stop wear pads.

(e) If lifting cam guide adjustment is made, verify latch crank enters lifting cam freely, and recheck for proper entry and adjustment of door rollers in upper and lower roller guide fittings (Ref. 52-30-04).

(f) Recheck position by latching door again. Repeat Steps 3C(4)(a) through (e) until pressure stop adjusting bolts are centered.

R (g) Repeat Steps 4C(4)(a) through (f) until all adjustment requirements are satisfied.

(5) Torque lifting cam guide inboard and outboard attachment bolts.

CAUTION: IF MORE THAN TWO ADJACENT PRESSURE STOP ADJUSTMENT BOLTS, OR ANY OF THE FOUR EXTREME CORNER POSITION BOLTS WERE BACKED OFF BECAUSE OF INTERFERENCE WHEN LATCHING DOOR, PRESSURE STOP BOLTS MUST BE ADJUSTED AS DESCRIBED IN 52-30-13.

(6) To adjust one or two adjacent pressure stop adjustment bolts which were backed off because of interference [Ref. Step (3)] proceed as follows:

(a) Close and latch cargo door.

NOTE: Do not stand on, or lean on cargo door while making bolt clearance measurements.

(b) Measure gap of adjacent adjustment bolts that were not disturbed.

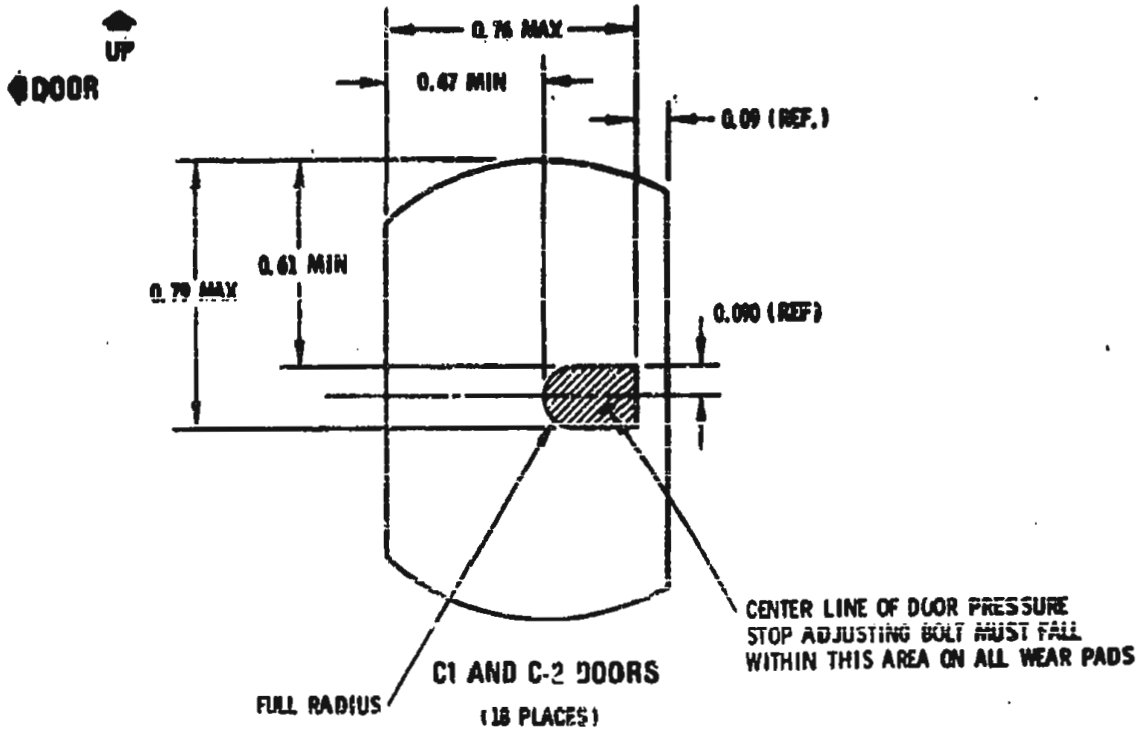
(c) Adjust gap of adjustment bolt to the average of those checked in Step (b).

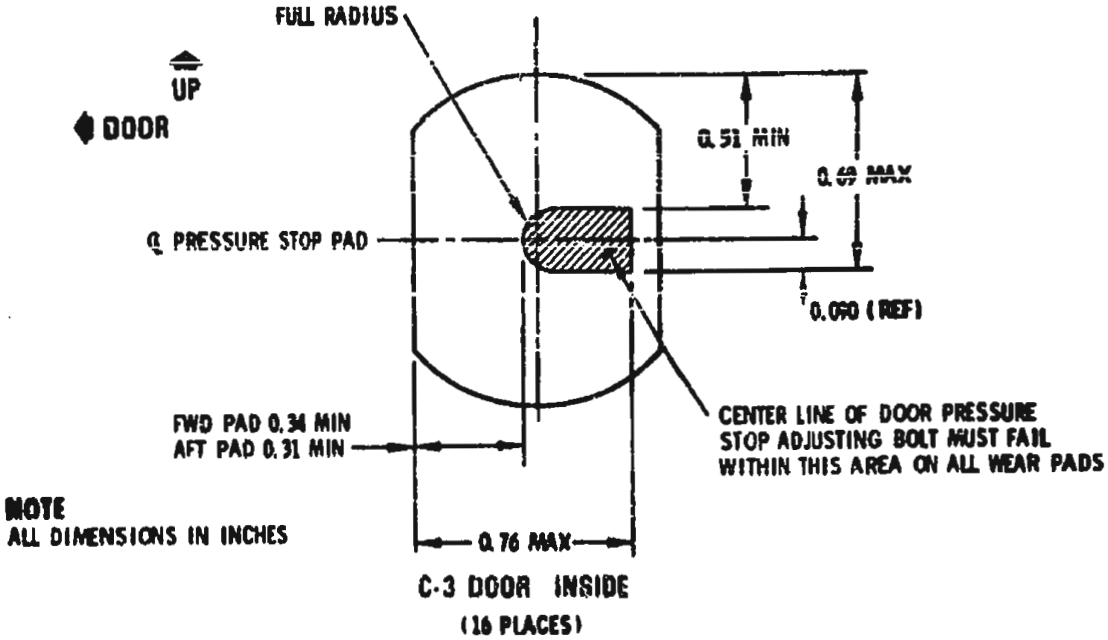
(d) Operate door to open and close several times to verify proper operation.

(e) If operation is acceptable install pressure stop adjustment bolt wire-locks.

(7) If door was adjusted vertically, check adjustment of the door upper and lower hooks (Ref. 52-30-13, Adjustment and Test), and the door safety stop (Ref. 52-30-19, Adjustment and Test).

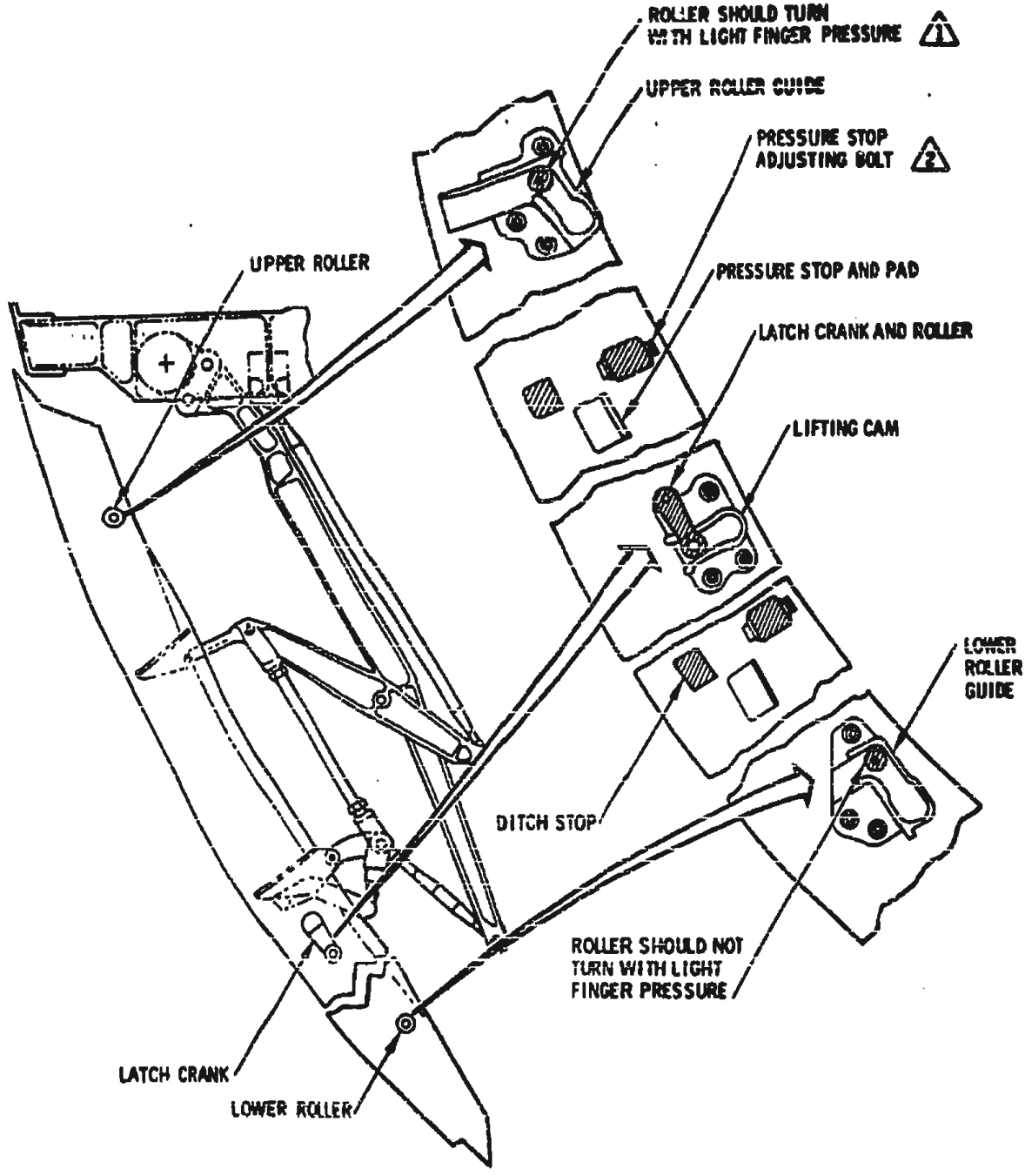
(8) If door operates normally to closed and open positions perform Cargo Door Maintenance Completion Check (Ref. 52-30-31).





MI-45401-52-464

Pressure Stop Wear Pad Contact Patterns
Figure 501

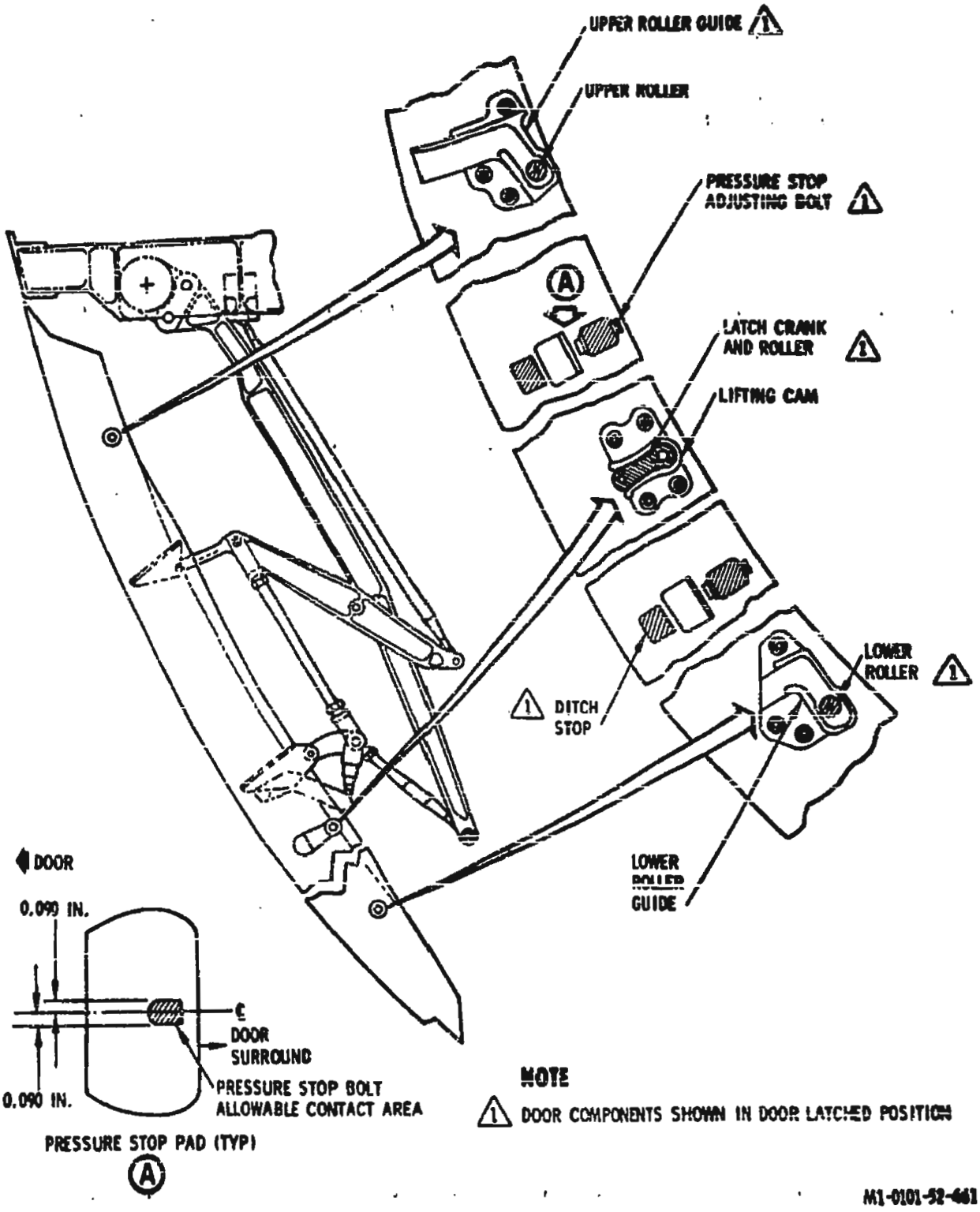


NOTE

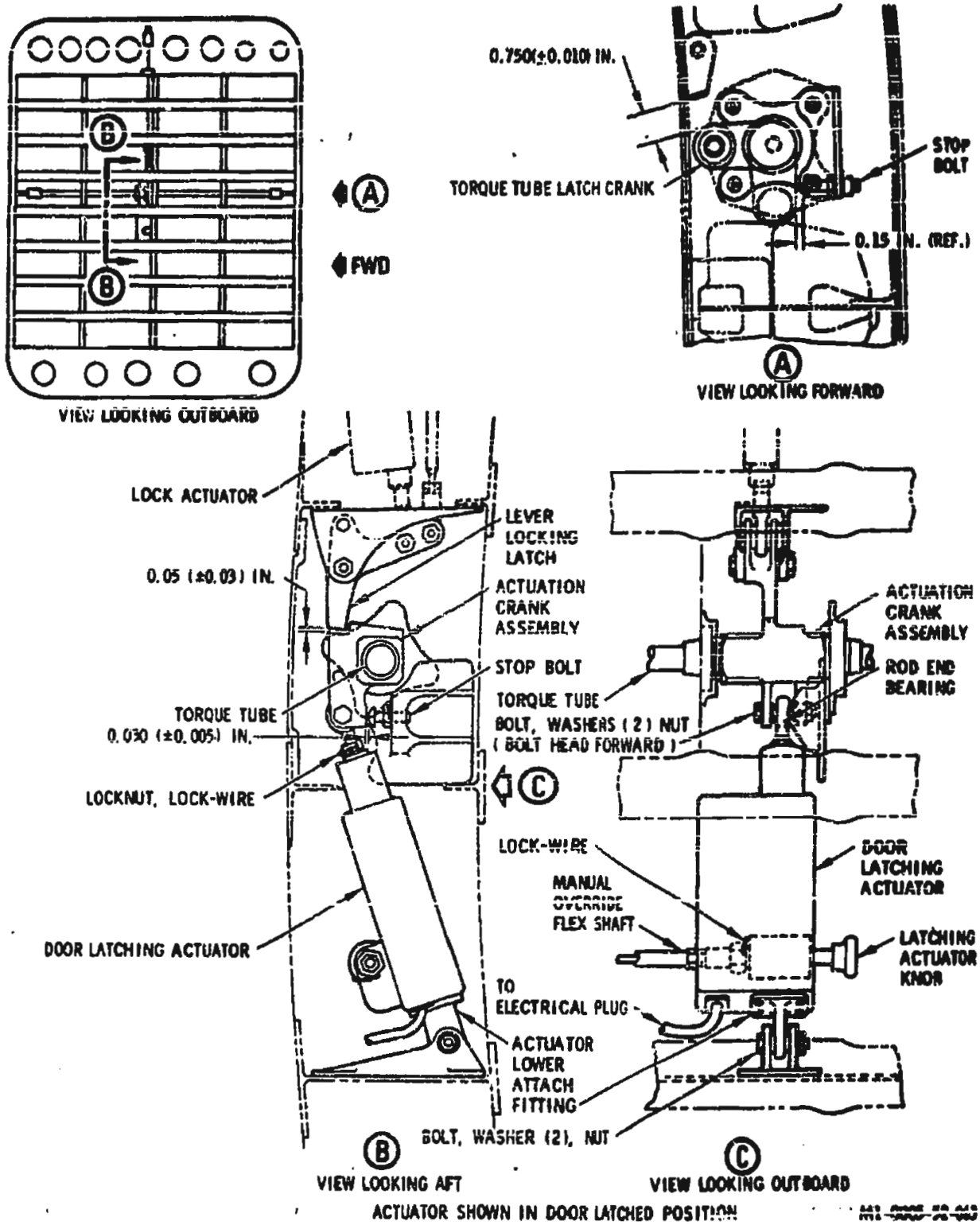
1. ROLLER ADJUSTMENTS TYPICAL AT FORWARD AND AFT ENDS OF DOOR
2. ON C-3 DOOR, TYPICAL 8 PLACES ON FORWARD AND AFT ENDS OF DOOR
   ON C-1 OR C-2 DOORS 9 PLACES ON FORWARD AND AFT ENDS OF DOOR

M1-45401-52-462

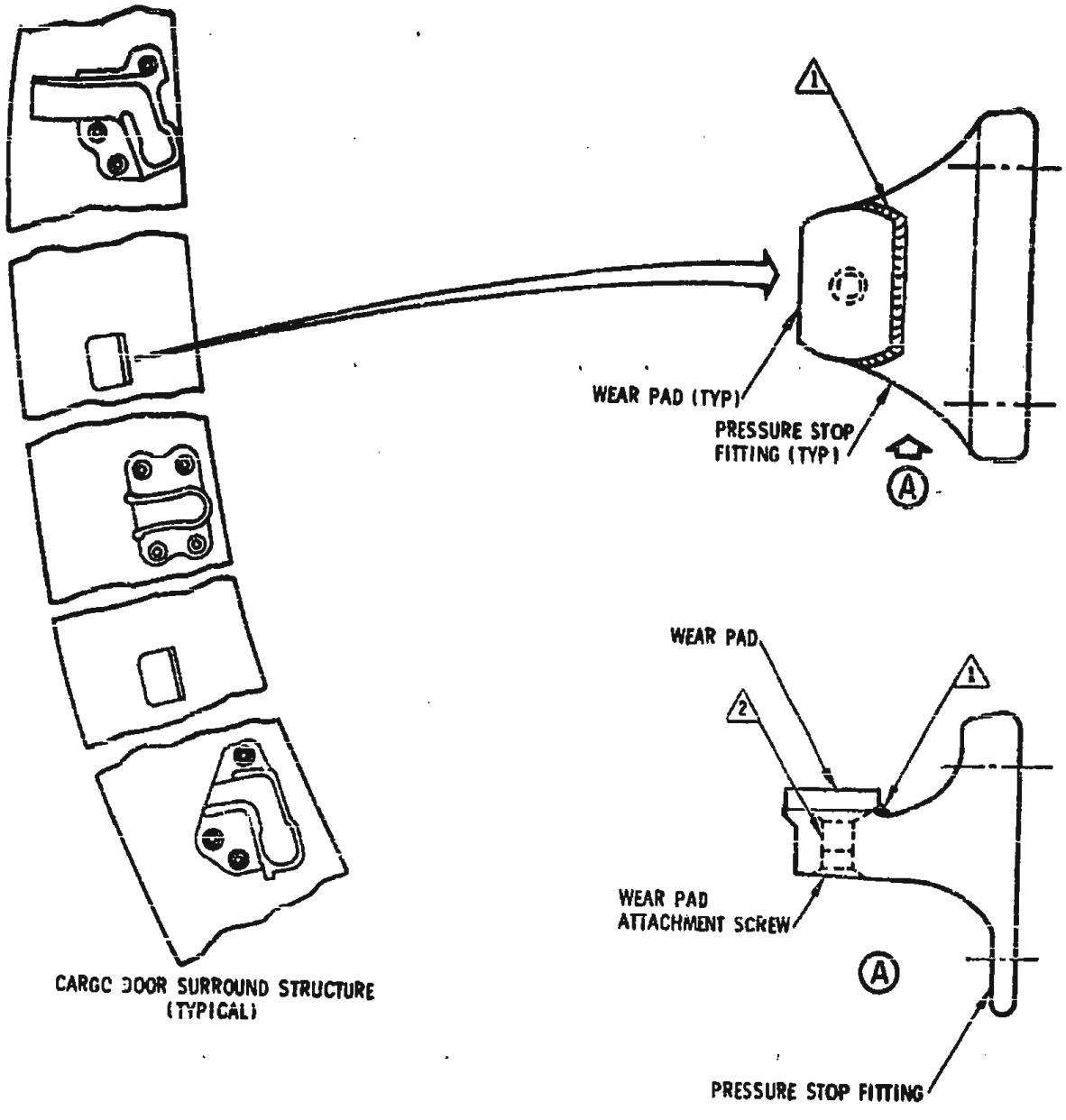
Cargo Door Closed (Not Latched)
Figure 502



Cargo Door Latched
Figure 503



C-1, C-2, C-3 Door Latch Crank Rigging Verification
Figure 504



NOTE

1. SEALING COMPOUND FILLET
2. WEAR PAD SHANK AND ATTACHMENT SCREW COATED WITH LOCTITE

M1-0000-52-937

R Pressure Stop Wear Pad Installation
R Figure 505

R EFFECTIVITY: ALL
R
001B

CARGO DOOR PRESSURE STOP BOLT AND HOOKS - ADJUSTMENT AND TEST

1. General

R These adjustment and test procedures provide instructions for
R the correct positioning of the cargo door upper and lower hooks.
R This is required to assure the maintenance of aircraft air
R pressurization loads, and to meet required aircraft aerodynamic
R smoothness for flight. Instructions for the centering of a
R cargo door on the pressure stop pads are contained in 52-30-07,
R Adjustment and Test.

2. Equipment and Materials

Lower Hook Engagement Tool, EL295E5-1 DETAIL-101, or equivalent (C-1 Door)

Lower Hook Engagement Tool, EL295E5-1 DETAIL-102, or equivalent (C-3 Door)

Upper Hook Overlap Check Tool, 1566156-901SUT, or equivalent

Feeler Gage, EL705F10-26, or equivalent

Door Wedges

Pressure Stop Feeler Gage Set, 1566156CF-901 through 913, or equivalent

Corrosion Preventive Compound, MIL-C-16173 Grade 4, or equivalent

Lubricant, Molycote 3402 (LCM 34-1213), or equivalent

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Sealing Compound, Products Research Corp. PR7401K (LCM 40-2180 Type II), or equivalent

3. Referenced Procedures

52-30-01	Preparation for Cargo Door Rigging - Inspection and Check
52-30-04	Cargo Door Closing Check - Adjustment and Test
52-30-07	Cargo Door Latching - Adjustment and Test

52-30-19	Cargo Door Safety Stop - Adjustment and Test
52-30-22	Cargo Door Proximity Sensor - Adjustment and Test
52-30-31	Cargo Door Maintenance Completion - Inspection and Check
52-31-01	Cargo Door - Removal and Installation
52-34-00	Cargo Door Actuation System - Adjustment and Test

4. Adjustment/Test

A. Preparation for Adjustments

(1) Open cargo door and if ballmat is installed in doorway, remove four bolts and swing up or remove ballmat for access to sill area.

(2) Verify that all hooks are installed on door, if not, install hooks in full inboard position with outboard fasteners loose and inboard fasteners finger tight.

(3) Verify that cargo door area is clean and pressure seals are in good condition (Ref. 52-30-01 Inspection and Check).

(4) Electrically or manually close and latch door, verify that cargo door gaps and clearances are within tolerance (Ref. Fig. 501). If correction of fore and aft gap dimensions is required, refer to 52-31-01, Removal and Installation procedures.

(5) After completion of any one or more of the following procedures, verify that all fasteners are properly installed, torqued, and safetied as described in Paragraph J.

WARNING: CARE MUST BE EXERCISED WHILE MAINTENANCE IS PERFORMED ON THE CARGO DOOR WITH ELECTRICAL POWER IN THE DOOR OPERATING CIRCUITS.

R CAUTION: THE FOLLOWING PROCEDURES WILL REQUIRE THAT MECHANIC BE STATIONED INSIDE A CARGO COMPARTMENT WITH DOOR CLOSED AND LATCHED. AN ASSISTANT SHOULD BE STATIONED OUTSIDE THE AIRCRAFT EQUIPPED TO MANUALLY OPEN THE CARGO DOOR OR RENDER ASSISTANCE.

B. Lower Hook Overlap Check - (C-2 Door)

(1) Check lower hooks for correct overlap as follows:

R (a) Close C-2 door with one mechanic inside and another at door control.

(b) Remove one upper attachment bolt (either side) for access to check clearance between lower hook and lower pressure stop bracket. Clearance must be 0.06 to 0.15 inch (Ref. Fig. 502).

NOTE: This establishes correct hook overlap on the lower pressure stop bracket.

(c) If hook must be removed to correct overlap condition, mark hook and serrated plate to identify relationship for reinstallation.

(d) Refer to Paragraph D for correction of hook overlap out of tolerance.

(e) Repeat Steps (a) through (d) until hook overlap is correct.

(2) Perform lower hook fore and aft clearance check (Ref. Para. E).

C. Lower Hook Overlap Check (C-1 and C-3 Doors)

(1) Check lower hooks for correct overlap as follows:

(a) With cargo door open, remove cotter pin and nut from lower hook pivot pin at each of lower hook pressure stop pivot fittings (Ref. Fig. 502).

(b) Withdraw bolt at each pressure stop pivot fitting approximately one inch (do not totally remove bolts).

(c) Close door with one mechanic inside and another at door control.

(d) Install tool EL295E5-1DET-102 at forward hook of C-3 door using NAS 6305 bolt, one inch long, or equivalent. Let tool swing down.

Install tool EL295E5-1DET-101 at forward hook of C-1 door using NAS 6305 bolt, one inch long, or equivalent. Let tool swing down.

(e) Rotate tool into position and with a mirror observe position of hook serrated surface relative to tool cutout. If hook serrated surface is visible in tool cutout area, hook overlap is acceptable. If shimming is required to correct

unacceptable overlap, note approximate amount of shim to be added or removed between P/N 1561515 plate and door structure.

(f) Repeat Steps (a) through (e) at each remaining hook. If overlap of any hook is unacceptable note approximate amount of shim to be added or removed.

(g) Open cargo door and add or remove shim as required (Ref. Para. D).

(h) Repeat Steps (d) through (g) until hook overlap of all lower hooks is correct.

(2) Perform lower hook fore and aft clearance check (Ref. Para. E).

D. Lower Hook Overlap Adjustment

(1) Correct lower hook overlap by removing or adding shims as follows (Ref. Fig. 502 and 503):

(a) Remove affected hook.

(b) Adjust shims by peeling laminated stock from back of serrated plate, or by adding shim stock.

NOTE: Shimming limitations at each hook are as follows:

Maximum laminated shim stock 0.125 inch (including shim attached to back side of serrated plate).

If additional material is required, use 2024-T3 or 7075-T6 to 0.250 inch maximum (laminated shim and sheet aluminum).

R

If shims exceed a total thickness of 0.250 inch, rerig door to lower position on pressure stops within adjustment tolerances (Ref. 52-30-07).

(c) Install serrated plate and shim stock with sealing compound applied to interfacing surfaces of serrated plate and support structure. Base of hook fitting (interfacing serrated plate) must be coated with corrosion preventive compound MIL-C-16173 Grade 4, and hook mount bolts must be lubricated with lubricant Molykote 3402.

(d) Reinstall hook adjusted to full inboard position, tightening inboard bolts only.

(e) Recheck hook overlap (Ref. Para. B or C).

(2) Check lower hook clearances and adjust if necessary (Ref. Para. G).

E. Lower Hook Forward and Aft Clearance Check

(1) Using feeler gage, check forward and aft clearance between lower hooks and adjacent surfaces of lower pressure stop brackets (C-2 door) and lower pressure stop pivot fittings (C-1 and C-3 doors), as follows (Ref. Fig. 503):

(a) Using Pressure Stop Feeler Gage set, measure Dimension "D" clearance between ditching stop on door at the lowest forward pressure stop and aft face of surround structure pressure stop fitting. Record measured clearance.

(b) Using feeler gage, measure Dimension "C" clearance between forward sides of each lower hook and aft side of the mating lower pressure stop bracket or pivot fitting. Record measured clearance for each hook.

(c) The clearance between each of the lower hooks and its mating pressure stop fitting (Dimension "C") must be at least 0.030 inch greater than the measurement recorded in Step (a).

(d) Using feeler gage, measure Dimension "A" clearance between ditching stop on door at lowest aft pressure stop and forward face of surround structure pressure stop fitting. Record measured clearance.

(e) Using feeler gage measure Dimension "B" clearance between aft sides of each lower hook and forward side of the mating lower pressure stop bracket or pivot fitting. Record measured clearance for each hook.

(f) The clearance between each of the lower hooks and its mating pressure stop fitting (Dimension "B") must be at least 0.030 inch greater than the measurement recorded in Step (d) (Dimension "A"), if not, refer to 52-31-01, Removal and Installation.

F. Pressure Stop Bolt Adjustment

(1) Close and latch cargo door.

CAUTION: DO NOT STAND OR LEAN ON DOOR WHILE ADJUSTING PRESSURE STOP BOLTS.

(2) Check for roller contact on outboard surface of roller guides. At least three rollers should contact outboard surface.

R (3) Turn four corner pressure stop bolts outboard until bolts contact pressure stop pads.

(4) Back off bolts approximately one-quarter to one-half turn as required to insert wire locks. Gap between pressure stop bolts and pads at the four corners must be 0.015 to 0.030 inch. Insert wire locks to lock stop bolts.

CAUTION: WHENEVER PRESSURE STOP BOLT ADJUSTMENT IS DISTURBED, THE HOOK ADJUSTMENTS ARE ALSO AFFECTED AND MUST BE CHECKED FOR PROPER CLEARANCE.

(5) Insert wedges to stabilize door for accurate stop bolt adjustments as follows:

NOTE: Wedges are used to simulate a door pressurized condition. After pressure stop bolt clearance adjustments are completed and wedges are removed, the stop bolt-to-pressure pad clearances will usually be greater than in the door-wedged condition.

(a) Insert wedges (Ref. Fig. 504) between ditch stops on door and pressure fitting on surround structure at the four extreme corner locations; wedge as necessary to maintain firm contact (0.000 to 0.005 clearance) between pressure stop bolts and wear pads at four corner locations. For repeatability of rigging clearances, wedges must be inserted in the following order:

Upper forward corner

Upper aft corner

Lower forward corner

Lower aft corner

(b) After inserting wedges as described, check all hooks for some clearance between hook and eccentric pin, pivot pin or bracket. Any hooks with zero clearance must be loosened and pressure stop bolts rechecked for required clearances.

(6) With wedges in place, adjust remaining pressure stop bolts as described in Steps (3) and (4) except that gap between pressure stop bolts and wear pads must be 0.000 to 0.015 inch, with wire locks installed.

(7) Verify installation of all pressure stop bolt wire locks.

(8) Check lower hook clearances and adjust if necessary (Ref. Para. G).

(9) Check upper hook overlap and clearances and adjust if necessary (Ref. Para. H).

G. Lower Hook Clearance Adjustment

(1) Adjust lower hook clearance using lower hook feeler gage EL705F10-26 as follows:

(a) With door closed and wedged [Ref. Para. F Step (5)], measure hook to lower pressure stop pivot pin clearance using gage. Clearance at each forward and aft hook must be 0.010 to 0.072 inch (Ref. Fig. 505). Clearance at each center hook must be 0.032 to 0.095 inch.

(b) To adjust hook clearance, loosen inboard hook attachment bolts to free hook from serrated plate. Adjust clearance as required and tighten two inboard bolts.

NOTE: If hook attachment bolts are not accessible, door must be opened, inaccessible bolts loosened and door reclosed and wedged to make the above clearance adjustments.

H. Upper Hook Overlap and Clearance Adjustments

(1) Adjust upper hooks for correct hook overlap and clearance as follows (Ref. Fig. 506):

R (a) With door closed and wedge check hook overlap using tool 1566156-901 SUT. Using both ends of tool, check that hook does not exceed minimum and maximum overlap limits. If hook exceeds either

limit, determine the amount and direction of hook movement to correct.

(b) Using feeler gage, check for hook-to-eccentric pin clearance of 0.020 to 0.080 inch at forward and aft hooks, and 0.040 to 0.100 inch at center hook. If hook overlap is within acceptable limits, adjust clearance by loosening hook eccentric pin through bolt and rotating eccentric pin. If additional clearance adjustment is required refer to Step (c).

(c) If hook exceeds minimum or maximum hook overlap limits [Ref. Step (a)], or if additional clearance adjustment is required [Ref. Step (b)], loosen hook retainer bolts, free hook from serrated plate and move hook inboard or outboard as required to meet acceptable limits of hook overlap and clearance. Tighten bolts.

NOTE: If hook cannot be rigged within tolerance using eccentric pin, or by movement of the slotted hook with shims, door must be rerigged inboard or outboard as required (Ref. 52-30-04).

(2) Check upper hook fore and aft clearances (Ref. Para. I).

I. Upper Hook Forward and Aft Clearance Check

R (1) With door wedges installed, check forward and aft clearance between cargo door upper hooks and adjacent surfaces of upper pressure stop pivot fittings as follows (Ref. Fig. 507):

(a) Using Pressure Stop Feeler Gage set, measure Dimension "D" clearance between ditching stop on door at forward upper pressure stop (beam No. 1) and aft face of surround structure pressure stop fitting. Record measured clearance.

(b) Using feeler gage, measure Dimension "C" clearance between forward sides of each upper hook and aft side of the mating upper pressure stop pivot fitting.

(c) Dimension "C" should be at least 0.030 inch greater than Dimension "D".

(d) Using feeler gage, measure Dimension "A" clearance between ditching stop on door at aft upper

pressure stop (beam No. 1) and forward face of surround structure pressure stop fitting. Record measured clearance.

(e) Using feeler gage measure Dimension "B" clearance between aft sides of each upper hook and forward side of the mating upper pressure stop pivot fitting.

(f) Dimension "B" should be at least 0.030 inch greater than Dimension "A", if not refer to 52-31-01, Removal and Installation.

(2) Remove wedges and open cargo door.

NOTE: The wedges are used to position the door against the pressure stops to simulate a door pressurized condition. When wedges are removed, the door will move away from the pressure stop pads and the clearances referenced in Paragraph F are not applicable.

R

(3) Torque all upper hook and lower hook attachment bolts as follows:

(a) All bolts must be installed wet with lubricant Molycote 3402.

(b) Torque all upper hook attachment bolts 69 to 75 lb inch.

(c) Torque lower hook inboard bolts 60 to 65 lb inch.

(d) Torque lower hook outboard attachment bolts 120 to 130 lb inch.

J. Completion Check

(1) Verify that all door wedges have been removed.

(2) Check position of safety stop, and gap between stop and striker at top of door and adjust if required (Ref. 52-30-19).

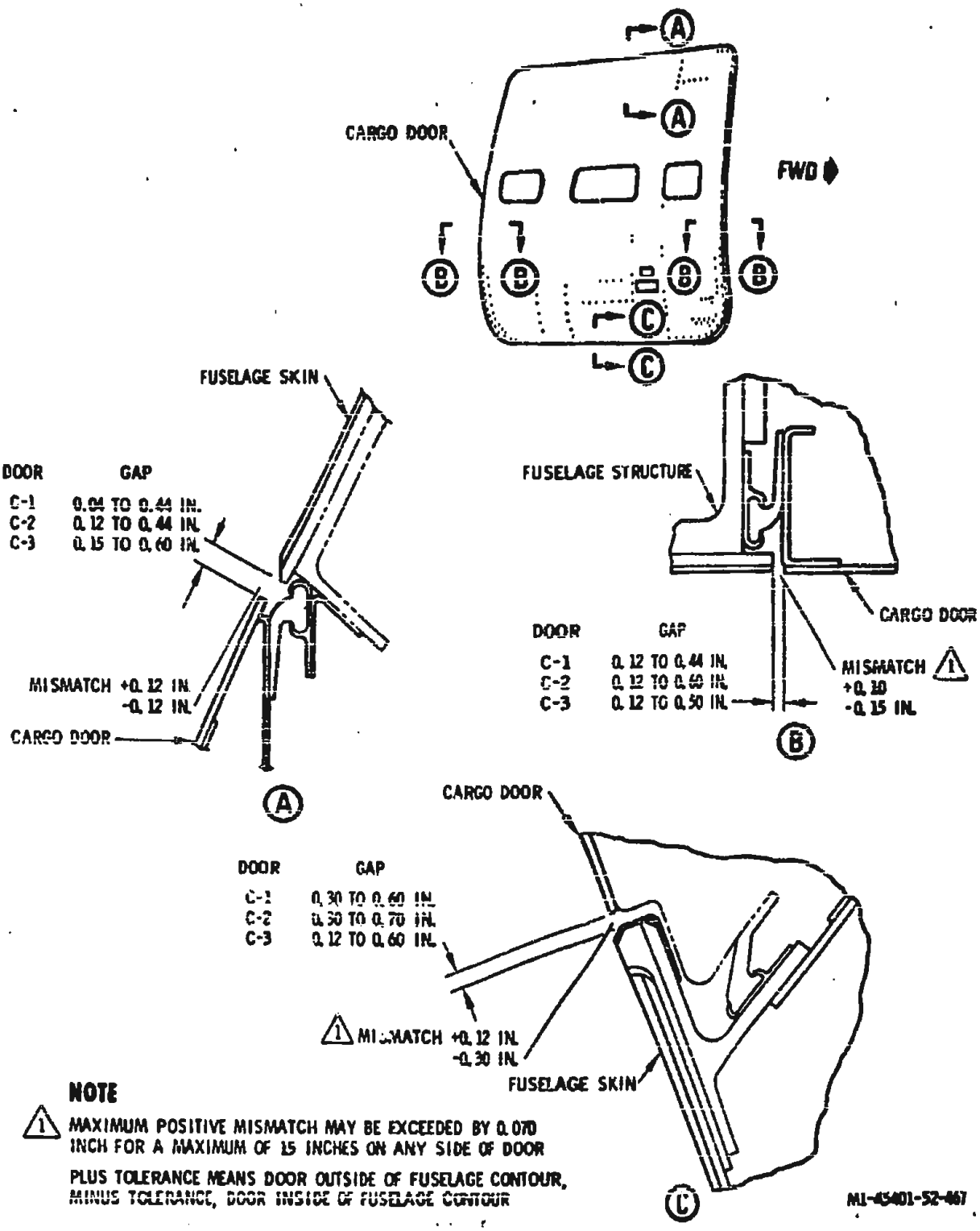
(3) Check position of proximity sensor and adjust as required (Ref. 52-30-22).

(4) Check all door components that were adjusted, for security of mounting and safetying, as required.

(5) Install ballmat in doorway if removed for access.

(6) Perform functional test (Ref. 52-34-00).

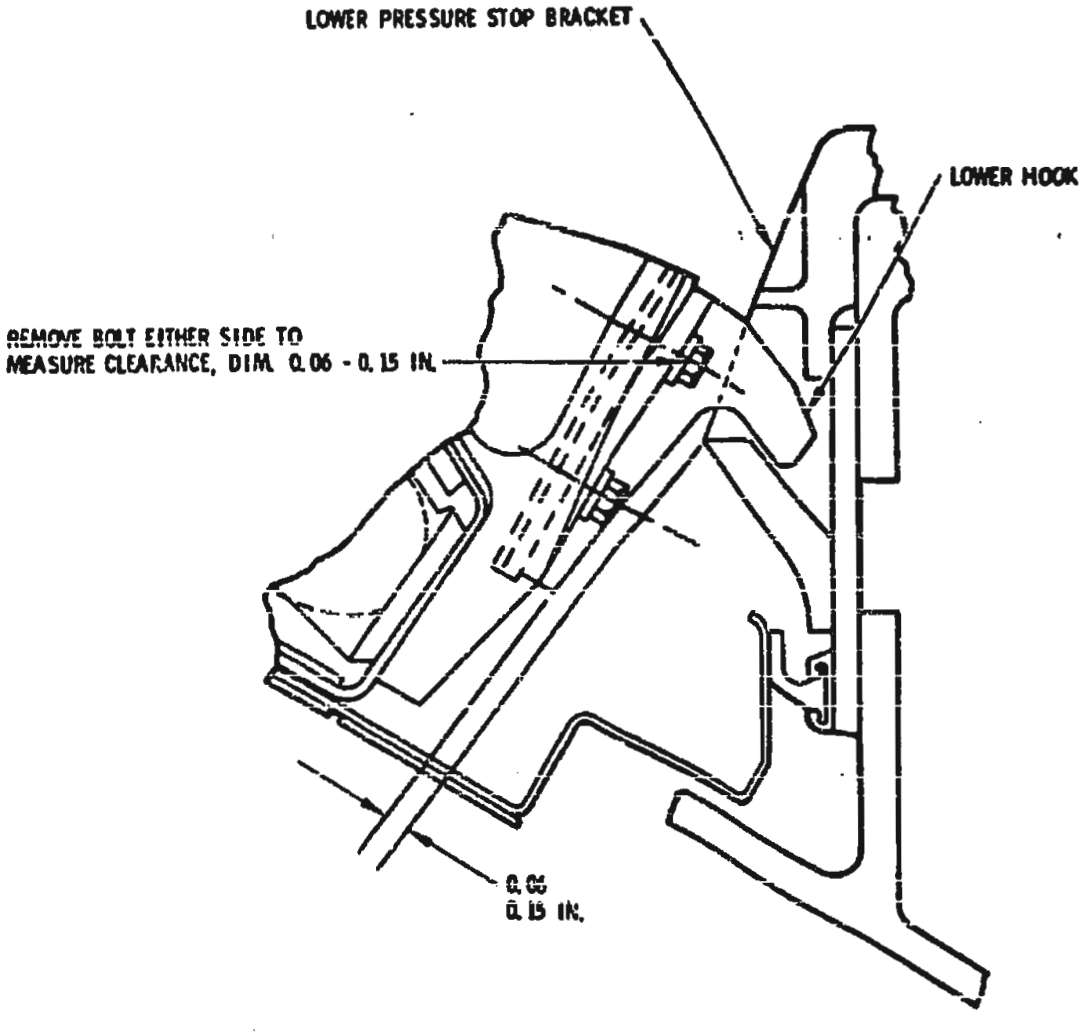
(7) If door operation is satisfactory, perform Cargo Door Completion Check (Ref. 52-30-31).



R R Cargo Door Gap and Mismatch Dimensions
Figure 501

EFFECTIVITY: ALL

001B

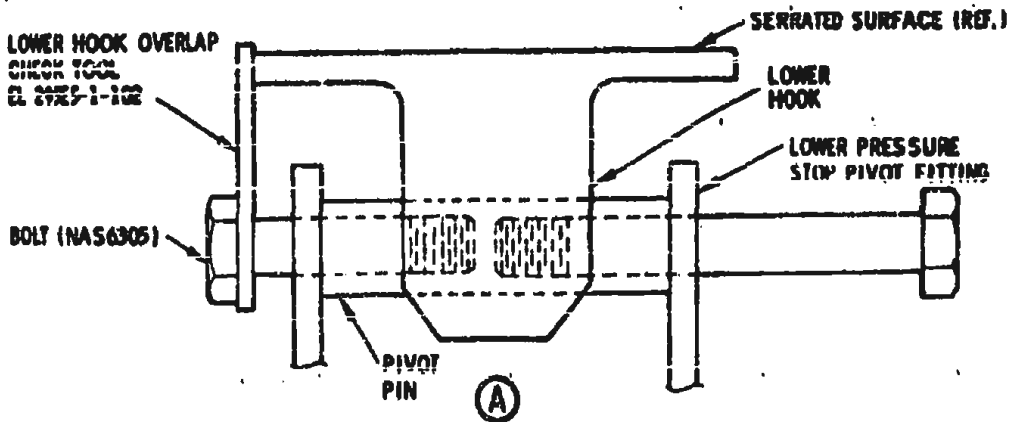


LOWER HOOK OVERLAP CHECK (C-2 DOOR)

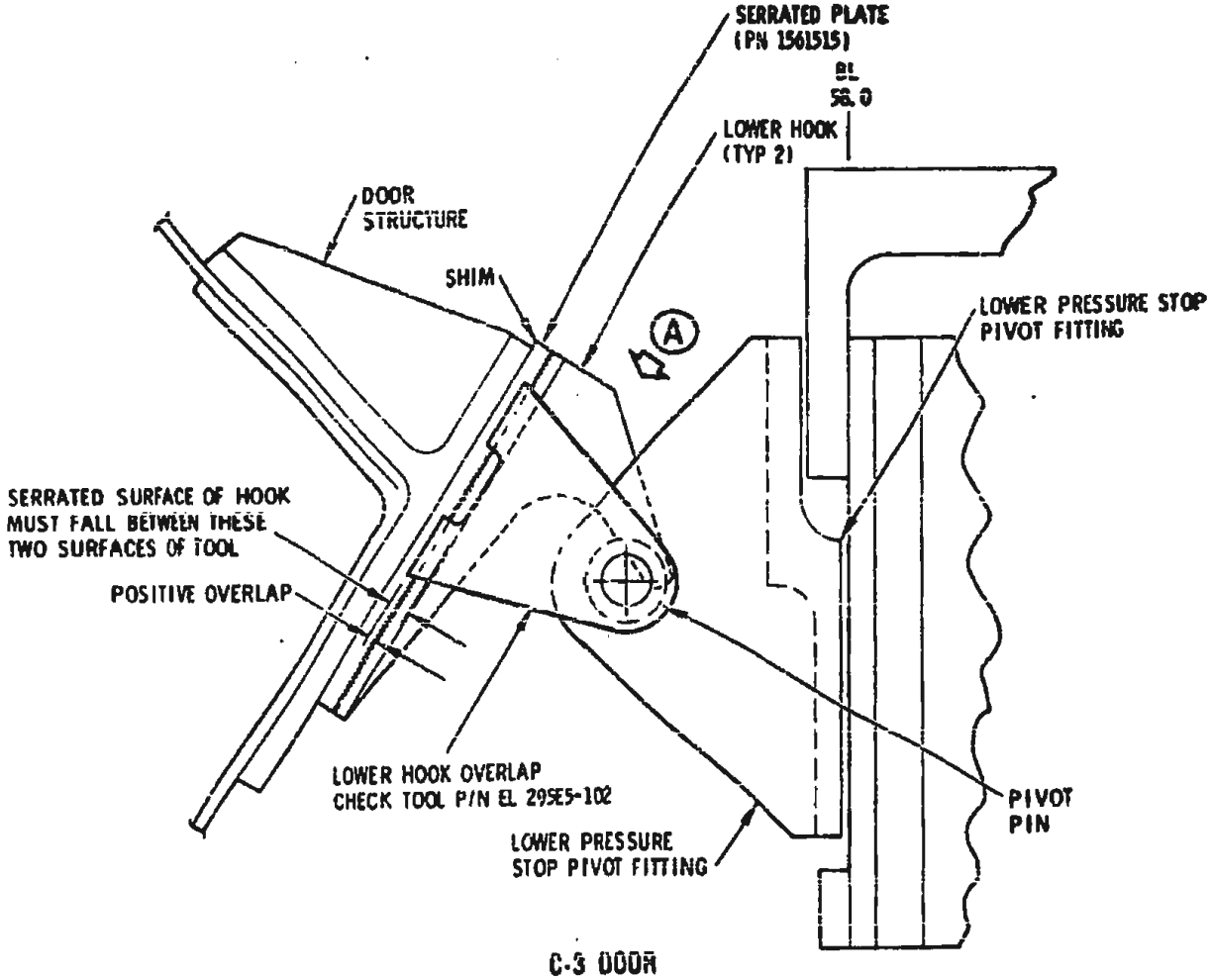
M1-0100-52-470

R
R

Lower Hook Overlap Check (C-2 Door)
Figure 502 (Sheet 1)



LOWER HOOK OVERLAP CHECK TOOL INSTALLATION


SERRATED PLATE (PN 1561515)
BL 58.0
LOWER HOOK (TYP 2)
DOOR STRUCTURE
SHIM
A
LOWER PRESSURE STOP PIVOT FITTING
SERRATED SURFACE OF HOOK MUST FALL BETWEEN THESE TWO SURFACES OF TOOL
POSITIVE OVERLAP
LOWER HOOK OVERLAP CHECK TOOL P/N EL 29SE5-102
LOWER PRESSURE STOP PIVOT FITTING
PIVOT PIN

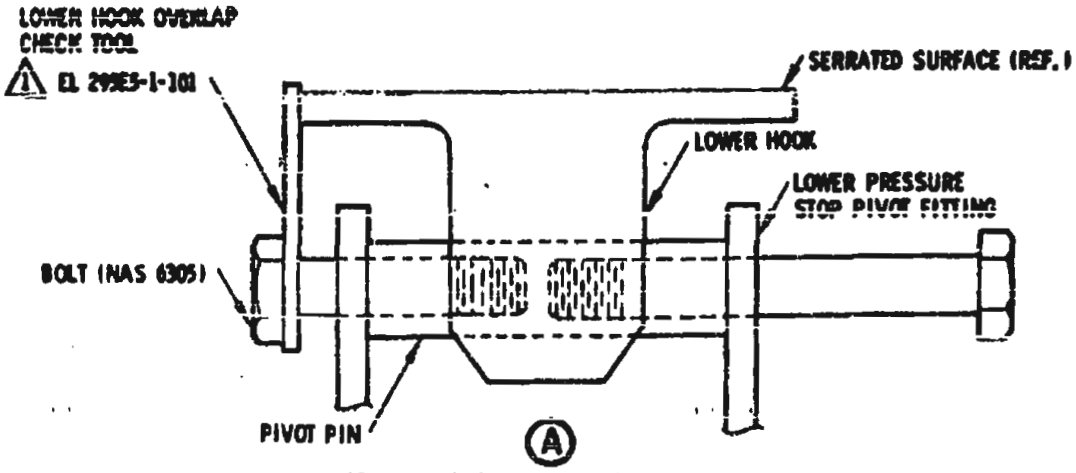
C-3 DOOR

M1-0002-52-471

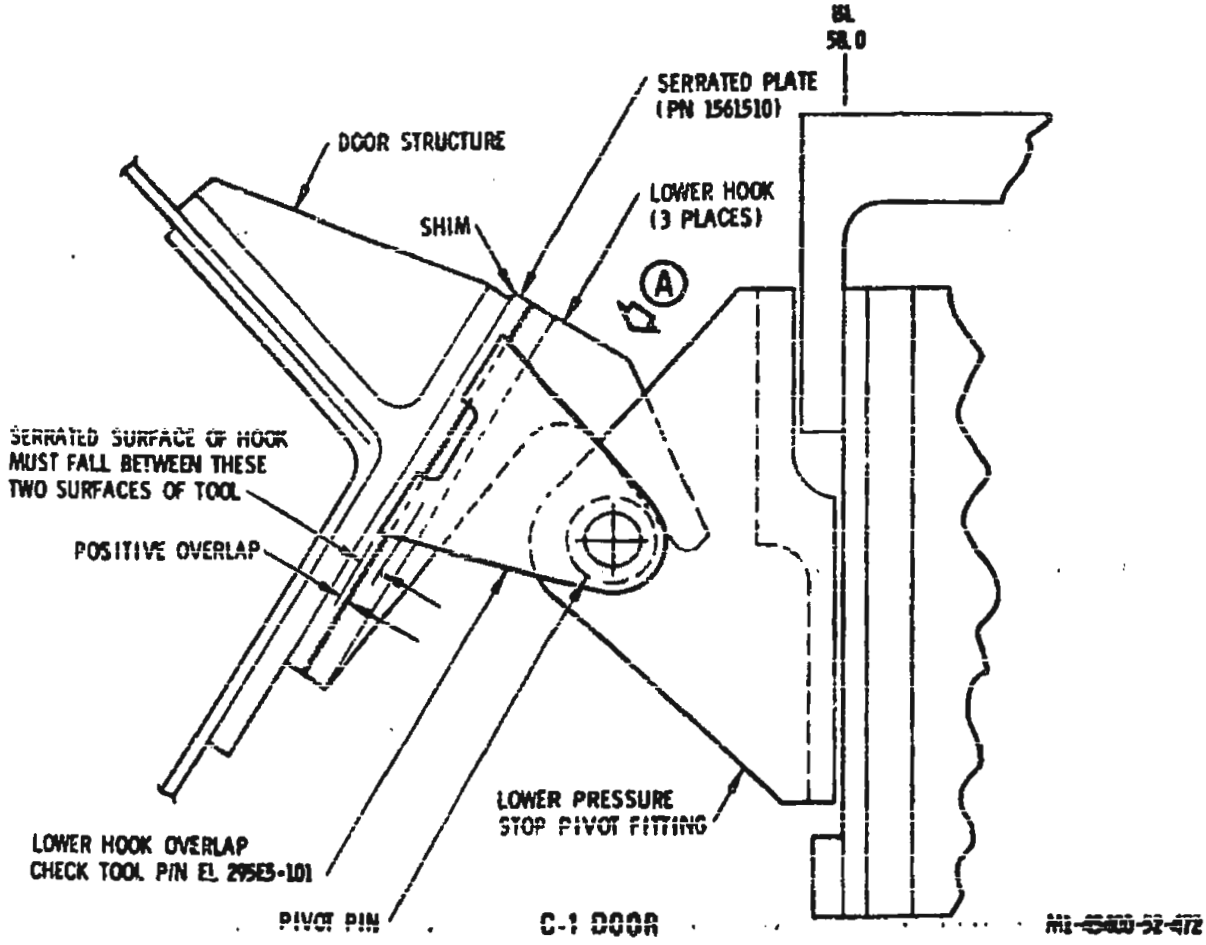
R Lower Hook Overlap Check
R Figure 502 (Sheet 2)

EFFECTIVITY: ALL

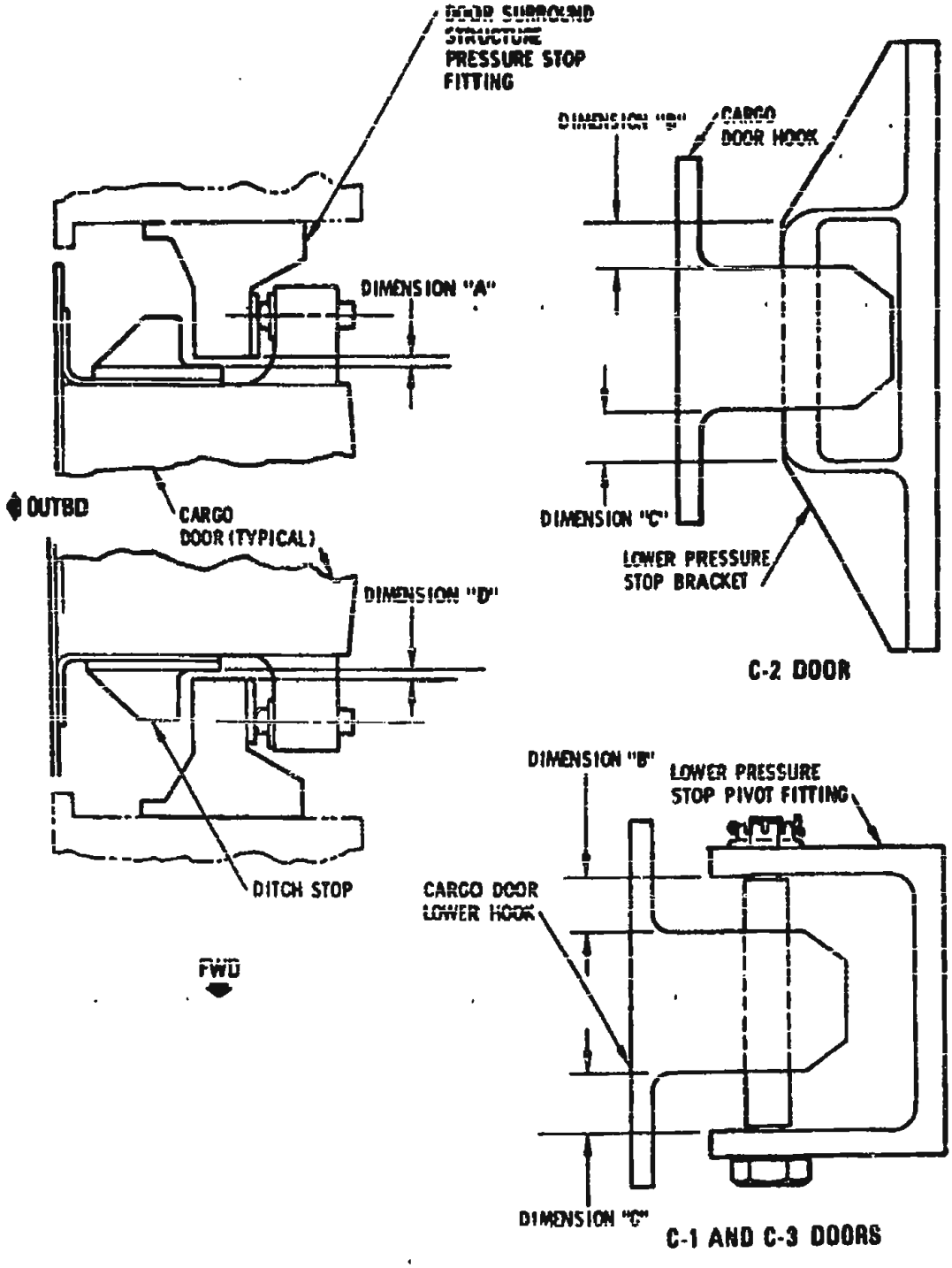
001B



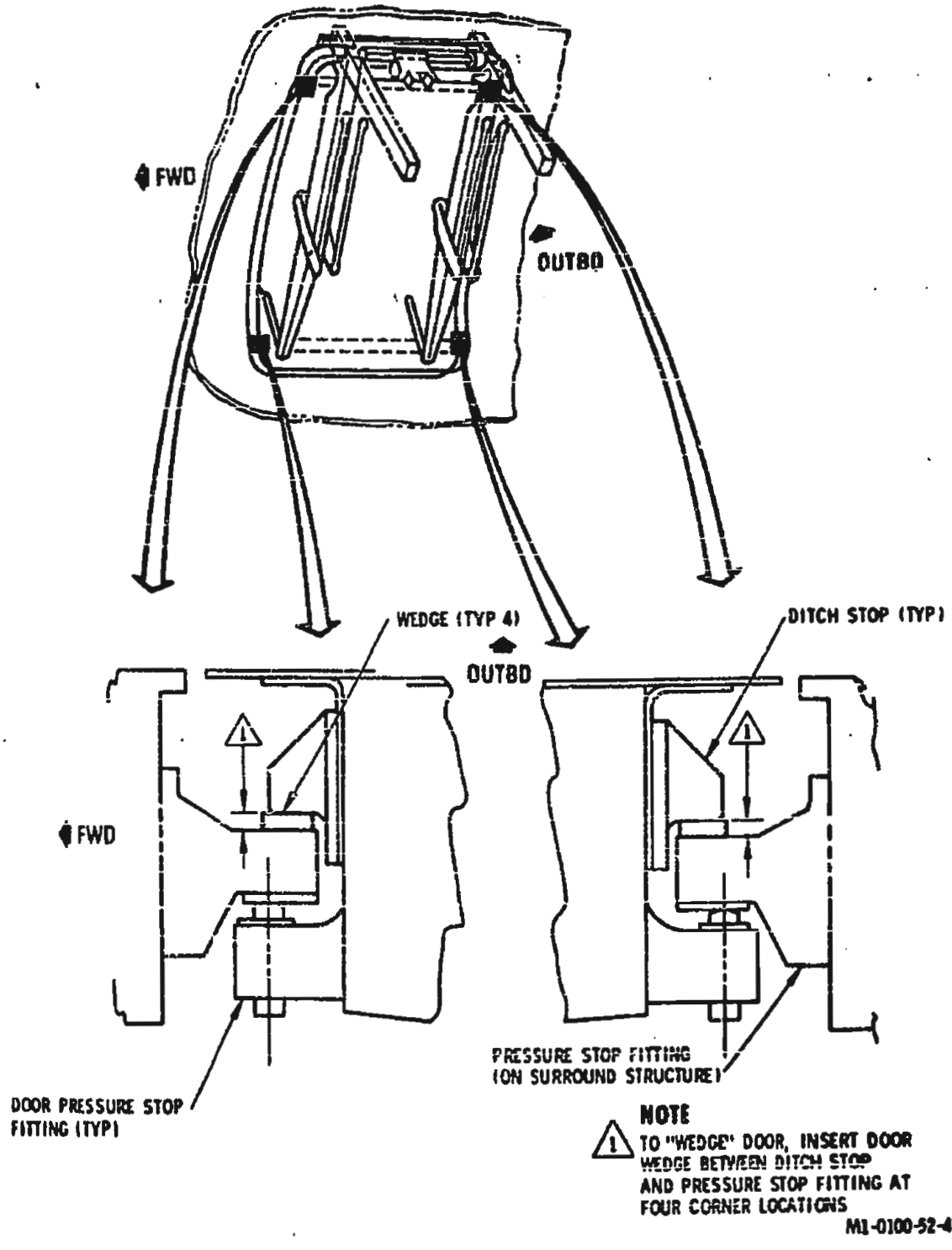
LOWER HOOK OVERLAP CHECK TOOL INSTALLATION



R R Lower Hook Overlap Check
Figure 502 (Sheet 3)



R
R Lower Hook Forward and Aft Clearance Check
Figure 503

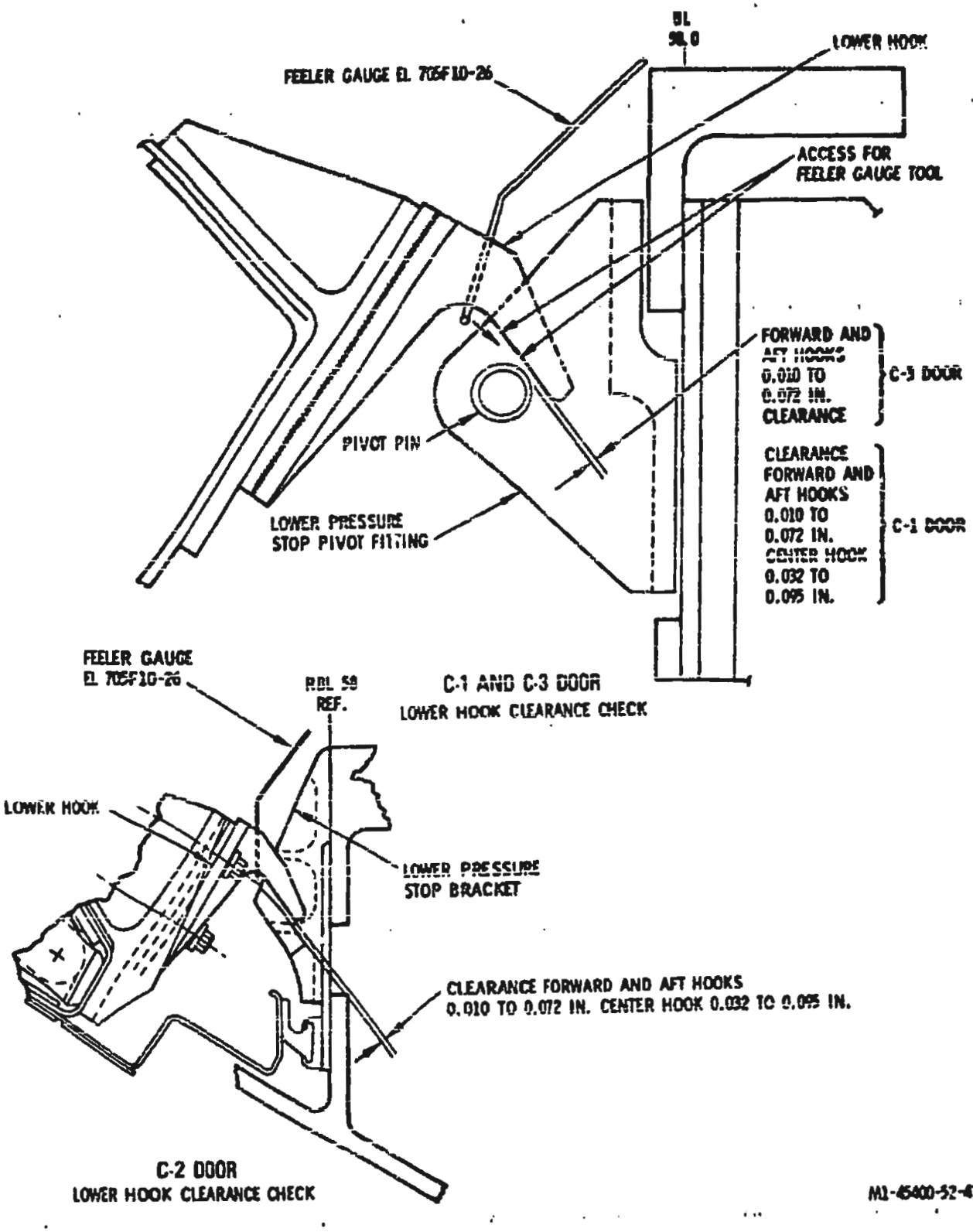


R
R

Cargo Door Wedge Installation
Figure 504

EFFECTIVITY: ALL

001B

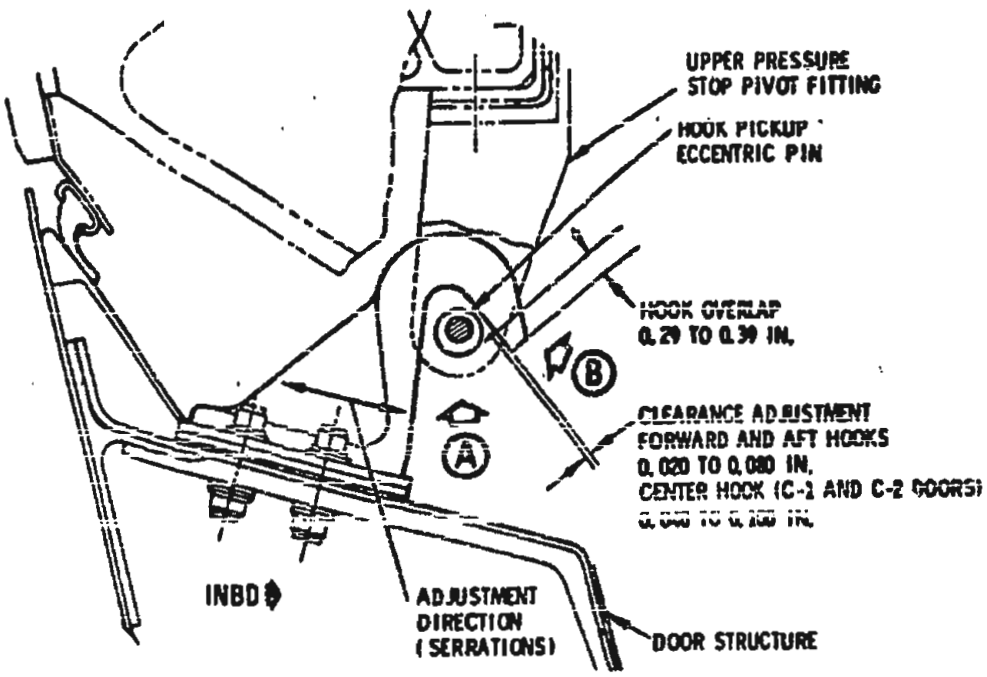


R
R

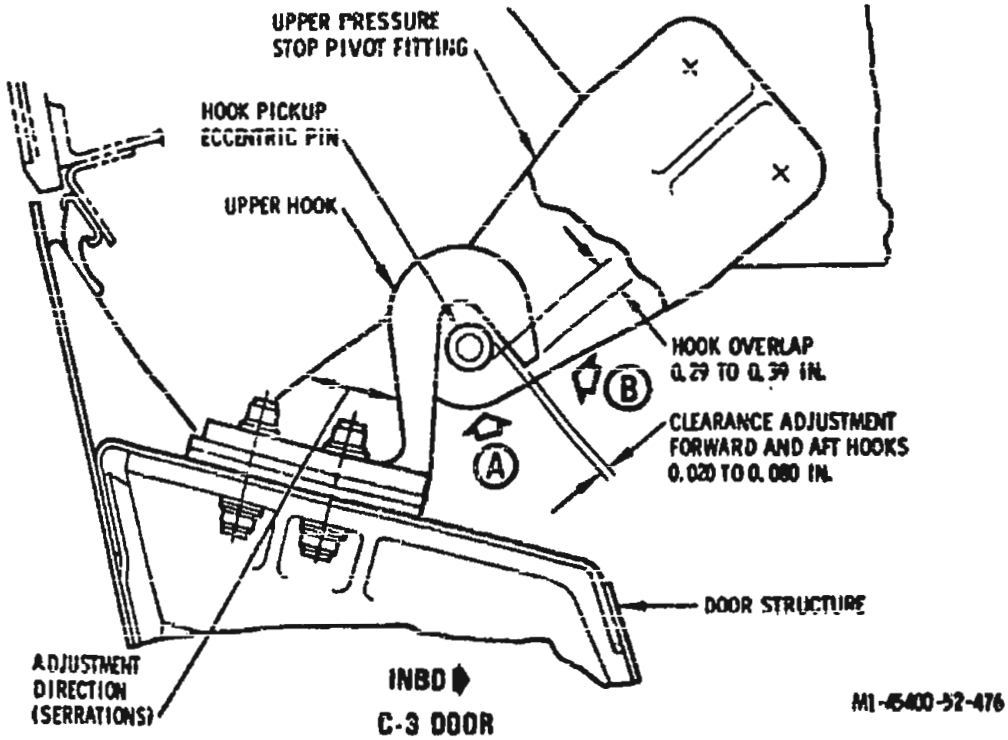
Cargo Door Lower Hook Clearance Check
Figure 505

EFFECTIVITY: ALL

001B



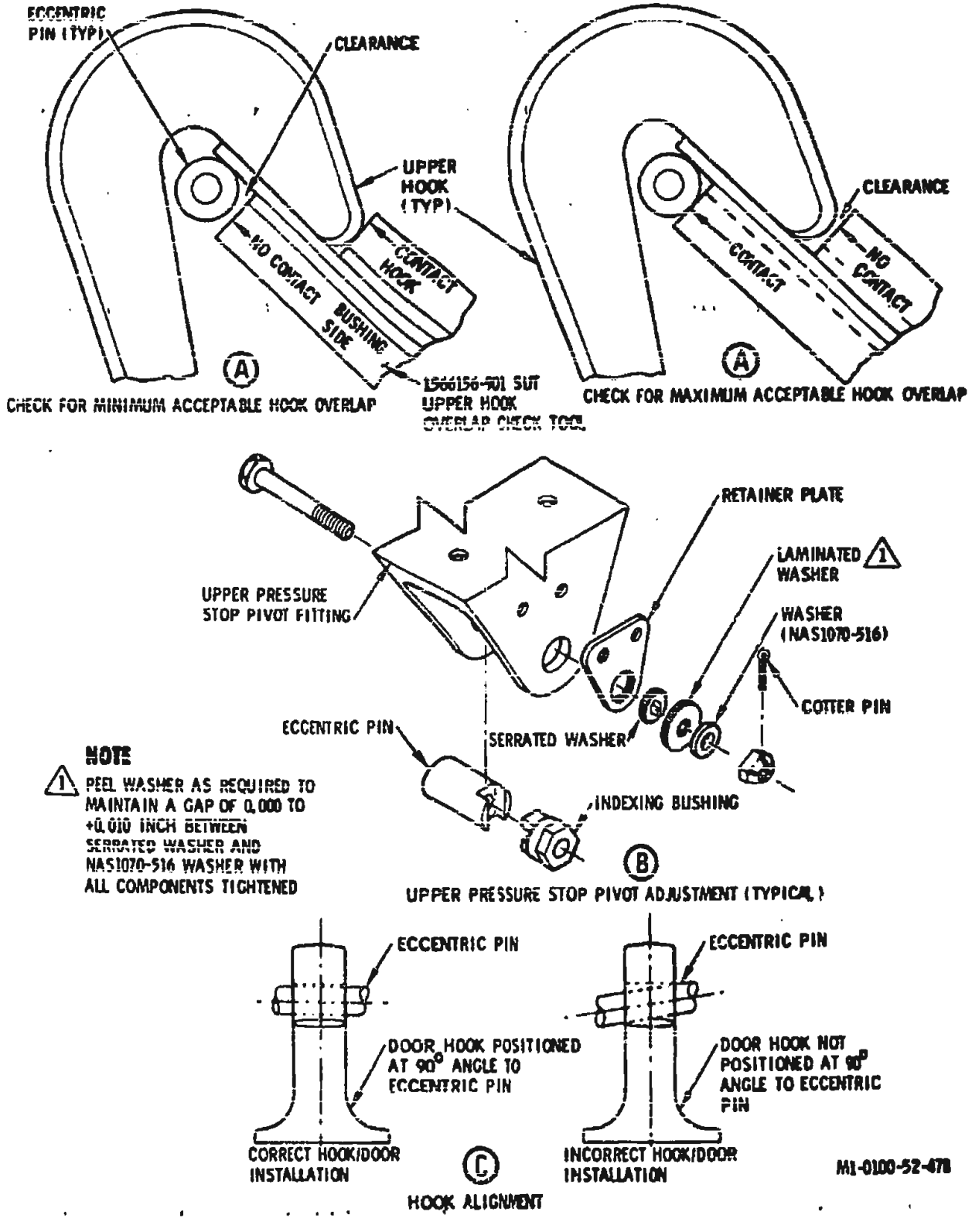
C-1 AND C-2 DOORS



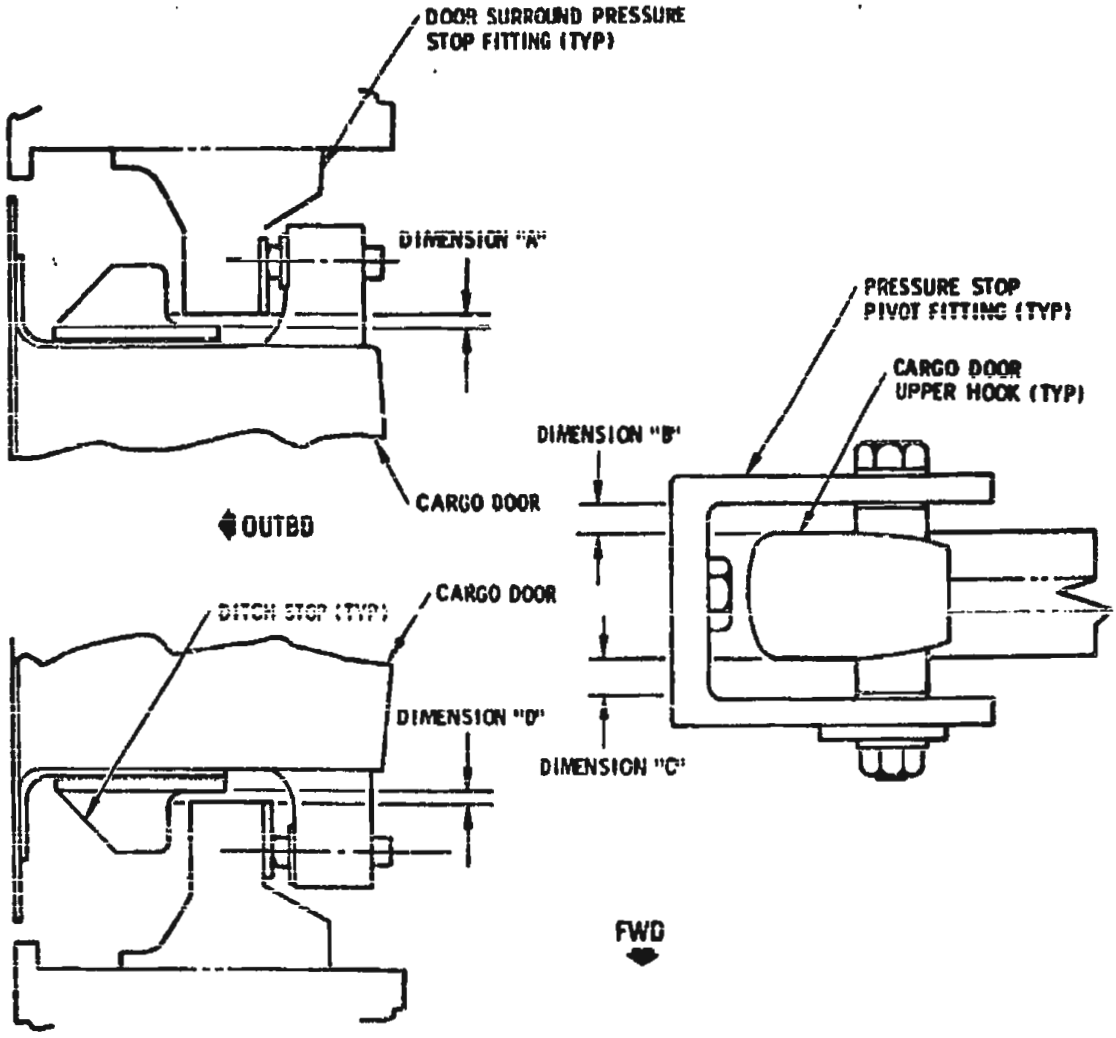
C-3 DOOR

R
R

Upper Hook Overlap and Clearance Adjustments
Figure 506 (Sheet 1)



R R Upper Hook Overlap and Clearance Adjustments
Figure 506 (Sheet 2)



M1-0100-52-477

R R Upper Hook Forward and Aft Clearance Check
Figure 507

CARGO DOOR SAFETY STOP - ADJUSTMENT AND TEST

1. General

These procedures provide instructions for checking and adjusting the cargo door safety stop in the locked position, and to assure that proper clearance is maintained between the safety stop and the interfacing safety stop striker fitting, or floor beam.

Any adjustment to the door affecting its vertical position on the surround structure pressure stops require that these checks be performed.

When adjustments are made affecting safety stop position the cargo door proximity sensor and door warning system must also be checked.

By definition, the door is technically locked when the spring-loaded safety stop meets the following requirements.

- The safety stop must be positioned directly under the safety stop striker fitting, or at the C-2 door, at a specified maximum angle relative to the floor beam.

- The safety stop must have a specified clearance between it and the adjacent safety stop striker fitting, or floor beam.

Visually the door is locked when the spring-loaded safety stop, located at the top center of the door has rotated into place under fixed structure so that the top of the safety stop will contact the structure and hold the door in the plug position should an attempt be made to lift the door out of the latched position.

2. Equipment and Materials

Rig Pin Tool, 1566156-915, or equivalent 0.312 inch diameter Steel Rod, or 5/16-inch Bolt 1/2-inch long

Six inch metal scale or equivalent sheet metal strip 0.015 to 0.025 inch thick

R Sealing Compound, LCM40-2121 (Products Research Corp., PR1431G,
R Type I), or equivalent

3. Referenced Procedures

52-30-01	Preparation for Cargo Door Rigging - Inspection and Check
52-30-04	Cargo Door Closing Check - Adjustment and Test
52-30-07	Cargo Door Latching - Adjustment and Test
52-30-22	Cargo Door Proximity Sensor - Adjustment and Test
52-30-31	Cargo Door Maintenance Completion - Inspection and Check
52-31-03	Door Lock Actuator - Removal and Installation
52-31-10	Safety Stop Push-Pull Cable - Removal and Installation

4. Adjustment/Test

A. Safety Stop Locked Position Check

(1) Prepare for rigging (Ref. 52-30-01). Verify surround structure cleanness and acceptable door seal condition.

(2) Operate door electrically to closed, latched, and locked position.

C (3) Using manual knob, actuate lock actuator from
C electrically retracted position to fully retracted
C position (normally 1/4 to 1/2 turn). Ensure the lock
C sensor target does not contact the face of the sensor.

(4) Insert rig pin into rig pin hole located in latch support bracket and lever locking latch (Ref. Fig. 501). If rig pin cannot be installed, verify that lock actuator is properly installed (Ref. 52-31-03).

(5) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

R (6) On aircraft 001, 003-013, 015-031 doors C-1, C-2 and
R aircraft 002, 014, 032-999 doors C-1, C-2, C-3,
R verify safety stop to be in locked position by checking
R for clearance of 0.005 to 0.015-inch between safety
R stop assembly and adjacent surface of safety stop
R support bracket (Ref. Fig. 502).

R (6) On aircraft 001, 003-013, 015-031 doors C-3, verify proper safety stop locked position by checking for clearance of 3.09 (±0.030) inch between bottom edge of 1/8-inch diameter hole on safety stop and top surface of safety stop support bracket base (Ref. Fig. 502).

R NOTE: The above clearance of 3.09 (±0.030) inch must be measured in the vertical plane as shown in Figure 502.

C (7) DELETED

(8) On aircraft 001, 003-013, 015-031, make minor Safety Stop position corrections as follows:

C CAUTION: ENSURE THAT THE LOCK SENSOR TARGET DOES NOT CONTACT THE FACE OF THE SENSOR.

(a) Disconnect safety stop push-pull cable lower end bearing at lever locking latch and adjust as required.

(b) If there is not sufficient cable for adjustment at lower end-bearing, loosen jam nut at upper end bearing and turn push-pull cable core into or out of upper bearing as required to gain adjustment at lower end bearing.

(c) Verify that threaded ends of push-pull cable appear fully engaged in both end-bearing inspection holes, after cable adjustments are completed.

(d) Reinstall lower end-bearing in lever locking latch and tighten jam nuts at lower and upper end-bearings as required.

(e) Verify safety stop position [Ref. Step 4A(6)].

(f) If minor adjustments of push-pull cable length will not correct safety stop position, re-rig safety stop push-pull cable (Ref. 52-31-10).

C (8) On aircraft 002, 014, 032-999, make safety stop corrections by adjusting pushrod to position safety stop to the locked position.

C (9) Verify clearance between upper end of safety stop and adjacent safety stop striker (C-1 and C-3 compartment) or floor beam (C-2 compartment) (Refer to Paragraph 4B).

R (10) After adjustment of safety stop position, and clearance
R adjustment (Ref. Para. B) is verified to be correct, verify adjustment of safety stop sensor/target (Ref. 52-30-22).

(11) Remove rig pin and tags. Close circuit breakers opened in Step 4A(5).

B. Safety Stop Clearance Adjustment

(1) Close, latch, and lock cargo door.

(2) Using manual knob, actuate lock actuator to fully
C retracted position (normally 1/4 to 1/2 turn from
C electrically retracted position).

C (3) Verify clearance between safety stop and safety stop
C striker at C-1, or C-3 doors (Ref. Fig. 502). At C-2
C door verify clearance between safety stop and floor
C beam (Ref. Fig. 502).

C (4) Minor corrections of safety stop clearance can be made
CR by slight adjustments of door up or down; however, the
C following items must be checked to assure that affected
C interfacing components are within correct tolerances.
C Make slight adjustments of door up or down by adjusting
C rig links (Ref. 52-30-04 Adj/Test 3.E.).

(a) Check upper and lower roller quide and lifting cam fittings for position of door rollers (Ref. 52-30-07).

(b) Check pressure stop adjusting bolt-to-pressure stop pad centering (Ref. 52-30-07).

(c) Check all upper and lower hooks for clearance (Ref. 52-30-13).

(d) Check proximity sensor/target clearance (Ref. 52-30-22).

(5) If additional adjustment of safety stop clearance is
C required, proceed as follows (Ref. Fig. 502).

(a) Open cargo door.

(b) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(c) At C-1 or C-3 door, remove safety stop striker and add or remove shims

as required to provide desired safety stop clearance. Install shim using sealing compound LCM40-2121, or equivalent. Reinstall striker fitting.

(d) At C-2 door, loosen safety stop support bracket and move bracket up or down as required to provide desired safety stop clearance. Be certain that serrated surfaces are properly meshed, then tighten bracket attachment bolts.

C (e) When safety stop clearance is properly adjusted, C verify that all attachment bolts and jamnuts are C tight. Lock-wire as required.

C (6) Verify safety stop locked position (Ref. paragraph C 4.A.).

(7) Close circuit breakers and remove tags.

(8) Operate door electrically to closed, latched and locked position.

(9) Verify adjustment of proximity sensor/target, and proper operation of cargo door warning system (Ref. Para. 4D).

(10) Close access doors, and install door liners as required.

C C. DELETED

D. Safety Stop/Proximity Sensor Check

(1) Turn on electrical power and prepare for check (Ref. 52-30-01).

(2) Unlock door and operate to open position.

(3) Operate door electrically to close, latch and lock.

(4) Verify appropriate CARGO light on FE/SO annunciator panel and DOOR OPEN light on pilots caution and warning annunciator lights panel are off.

(5) With cargo door closed and locked perform safety stop/proximity sensor check as follows:

(a) Manually turn lock actuator knob in unlock direction and stop when appropriate CARGO door light on FE/SO annunciator panel and DOOR OPEN

light on pilots caution and warning annunciator lights panel comes on.

(b) Measure position of safety stop relative to safety stop striker fitting (or floor beam lower surface at C-2 door), as applicable.

• On C-1 door,
verify that safety stop position is within inboard travel limits (maximum amount of inboard overhang) (Ref. Fig. 503).

• On C-2 door,
verify angle between inboard edge of safety stop and bottom of floor beam does not exceed maximum
C angle of 90.5 degrees (Ref. Fig. 503).

• On C-3 door,
verify that safety stop position is within inboard travel limits (maximum amount of inboard overhang) (Ref. Fig. 503).

(c) If any of above safety stop positions are not within limits, the appropriate cargo door
C proximity sensor must be readjusted as follows:

C NOTE: Do not adjust target to sensor gap by
C adjusting safety stop push-pull cable or
C pushrod.

C 1) If safety stop position exceeds the maximum,
C adjust the proximity sensor slightly further away
C from the target and repeat steps (a) and (b) until
C the safety stop position is less than the maximum.

C NOTE: The position should be as close as possible
C to the maximum to provide the greatest
C operating tolerance for the safety stop.

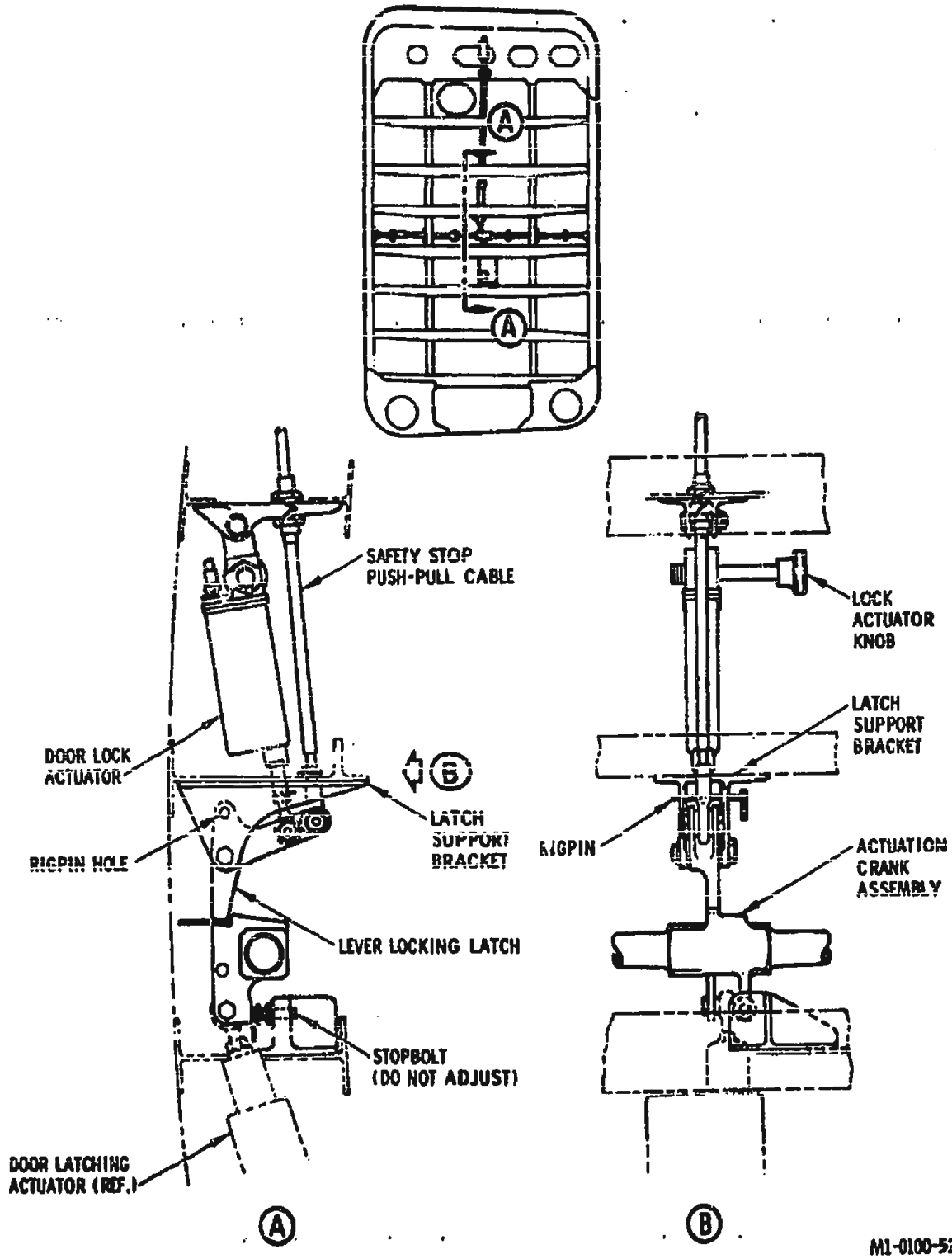
NOTE: THE LOCK ACTUATOR INDICATOR (GREEN) LIGHT MUST NOT BE USED TO VERIFY DOOR LOCKED CONDITION.

(6) Manually turn lock actuator knob counterclockwise to move safety stop to locked position. Verify applicable CARGO door locked caution light on Flight Engineer/Second Officers annunciator panel goes off. Verify LOCK ACTUATOR INDICATING LIGHT on door comes on.

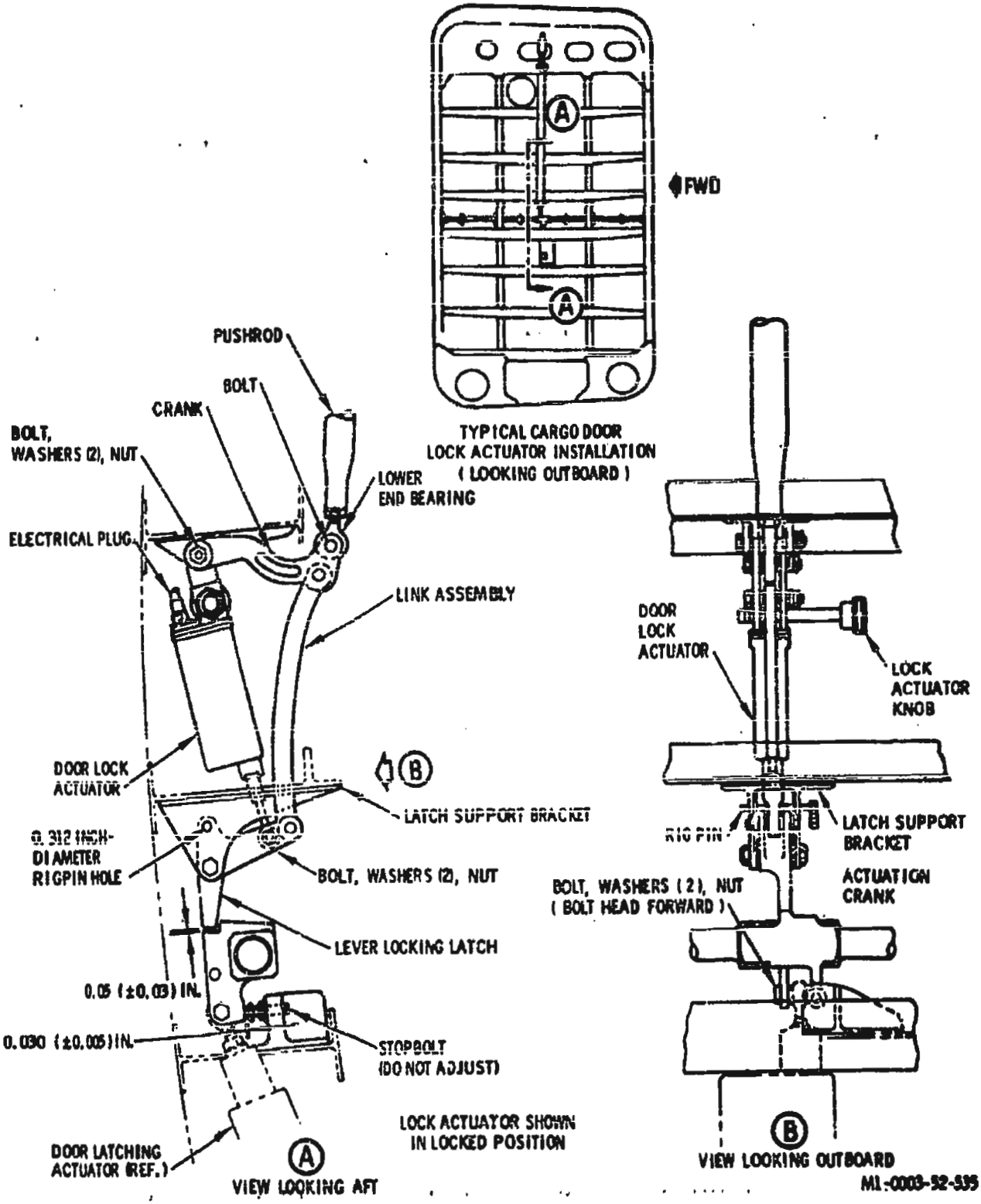
(7) Open cargo door using electrical mode.

(8) Turn off electrical power (Ref. 24-41-00).

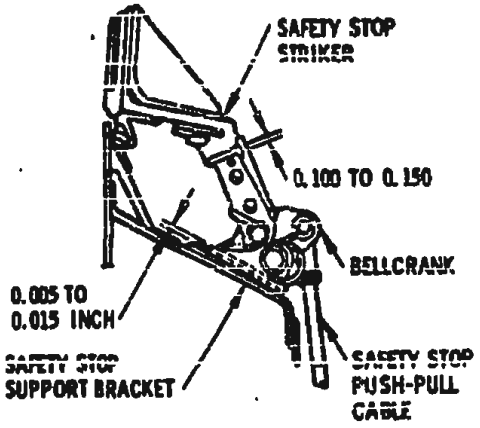
(9) If door operation is satisfactory perform cargo door completion check (Ref. 52-30-31).



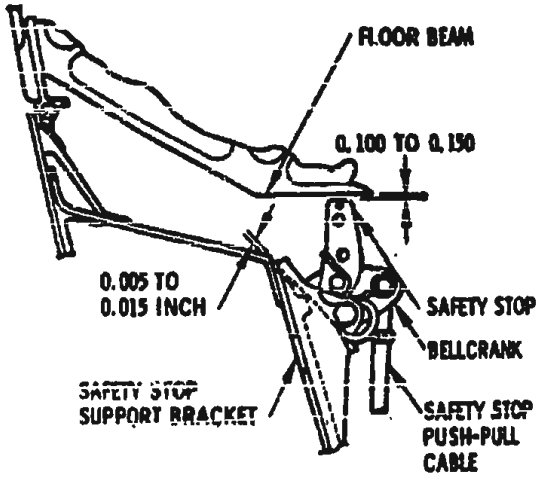
Safety Stop Rig Pin Installation
Figure 501



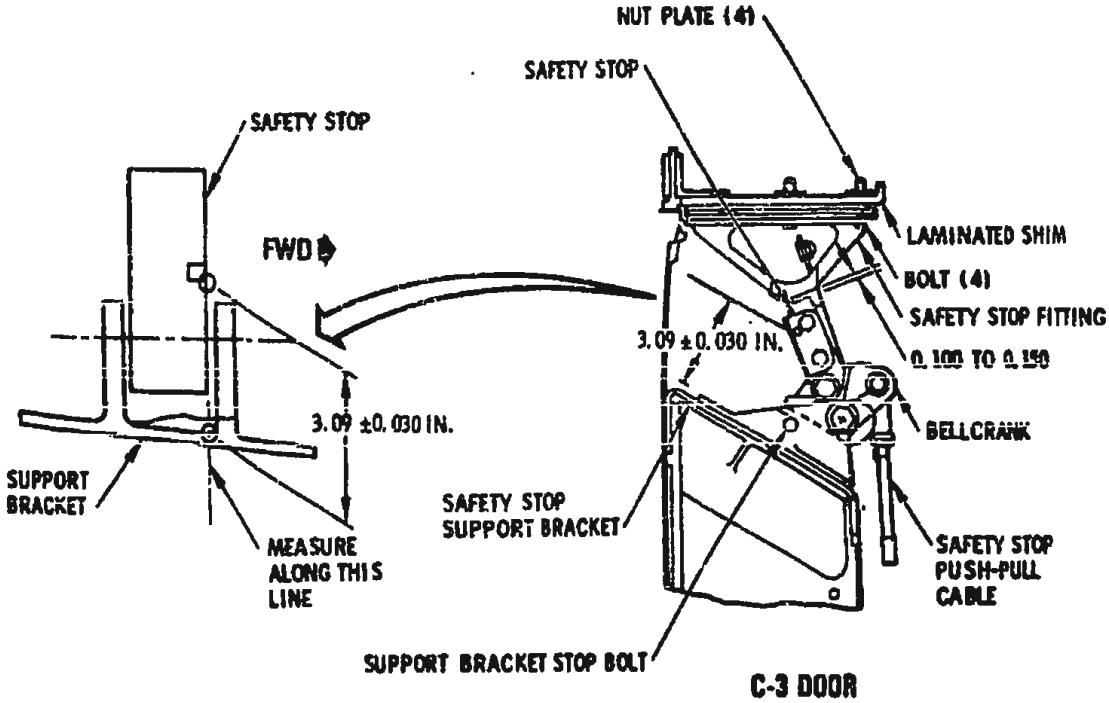
Safety Stop Rig Pin Installation
Figure 501



C-1 DOOR



C-2 DOOR



C-3 DOOR

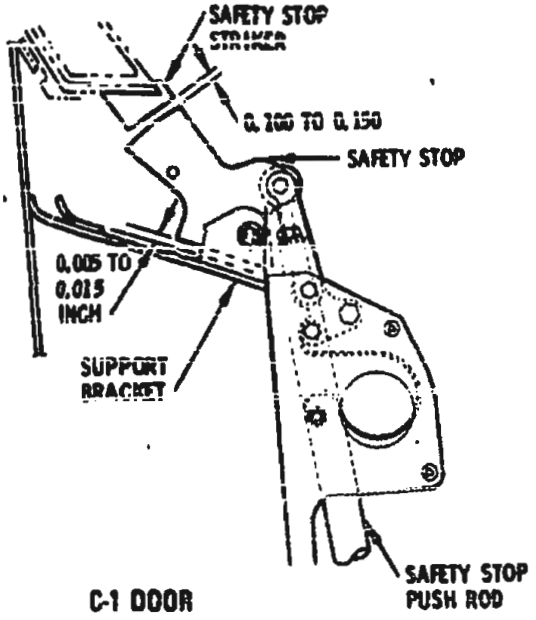
M1-0002-52-038

CR
CR

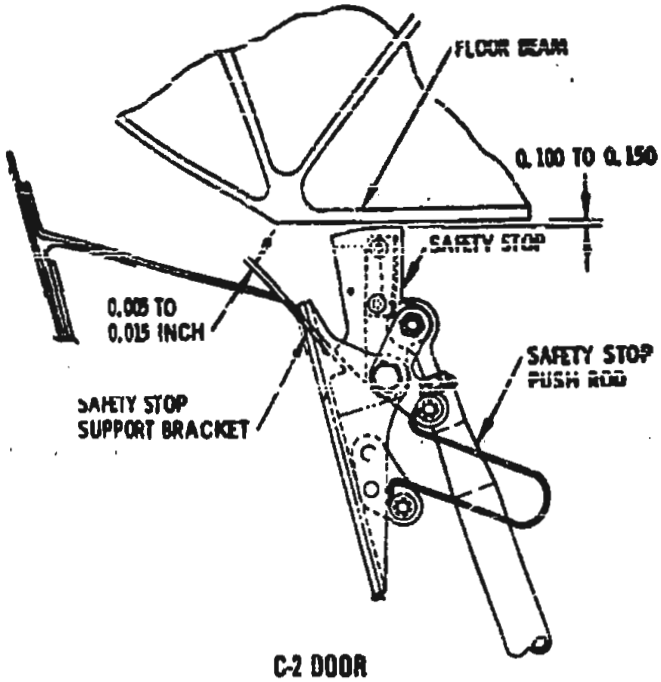
Safety Stop Adjustments
Figure 502

EFFECTIVITY: 001, 003-013, 015-031

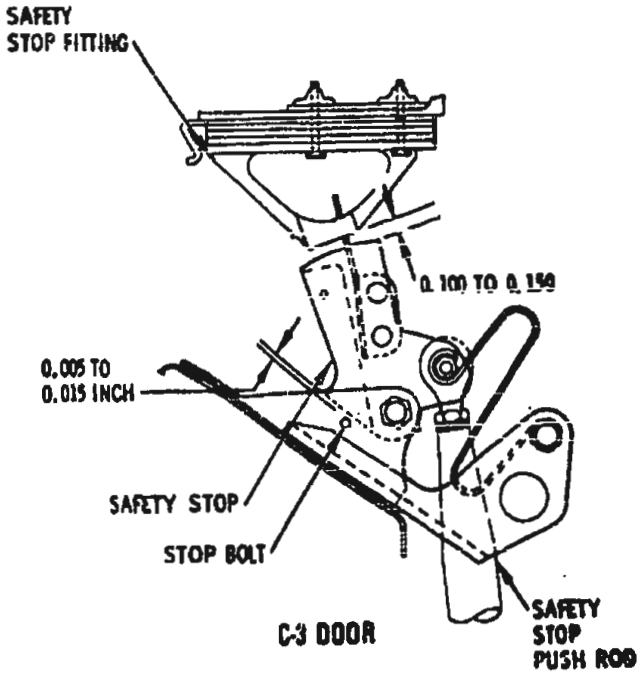
001B



C-1 DOOR



C-2 DOOR



C-3 DOOR

M1-0003-52-528

CR
CR

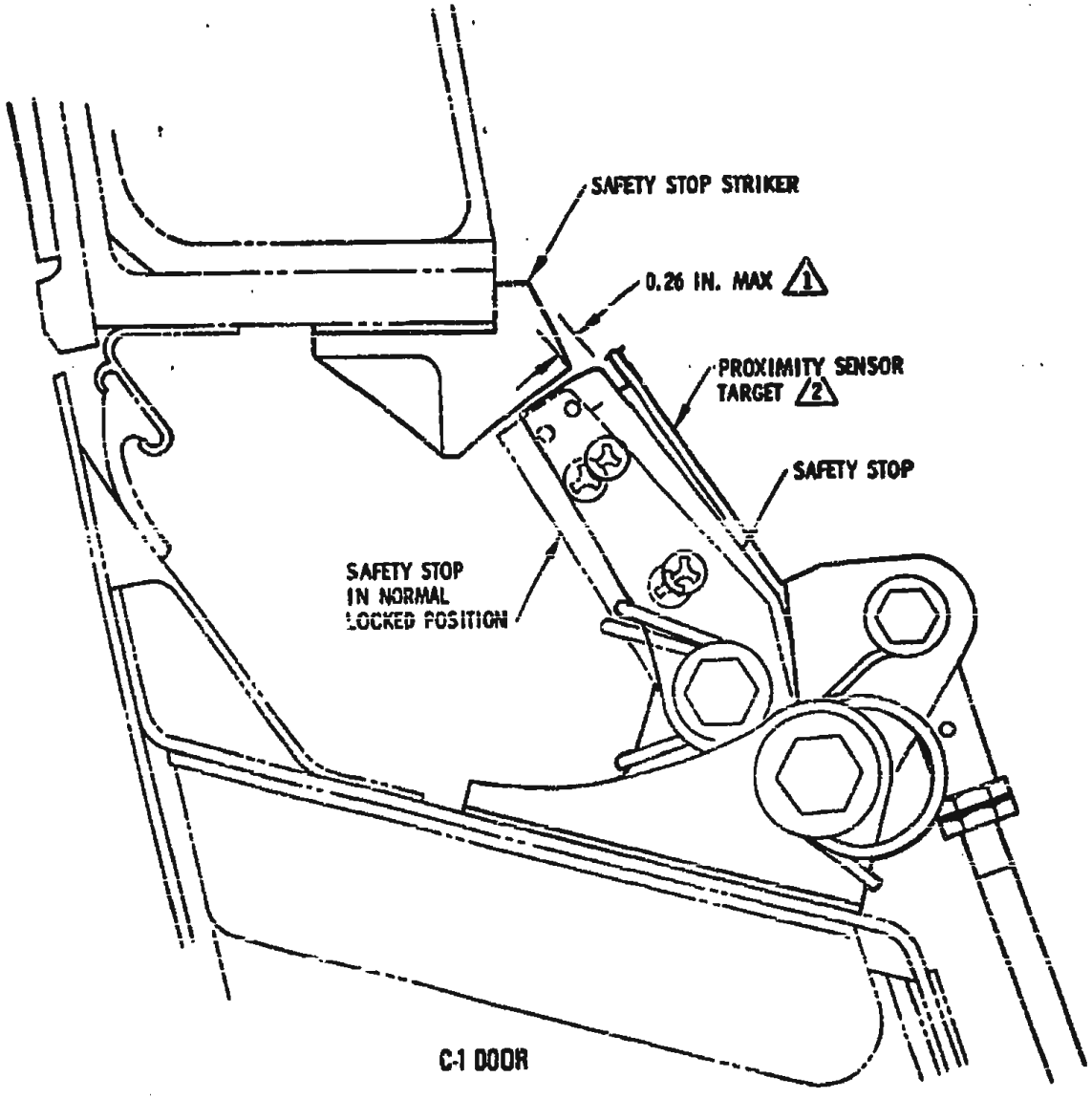
Safety Stop Adjustments
Figure 502

EFFECTIVITY: 002, 014, 032-999

001B

FIGURE DELETED

FIGURE DELETED

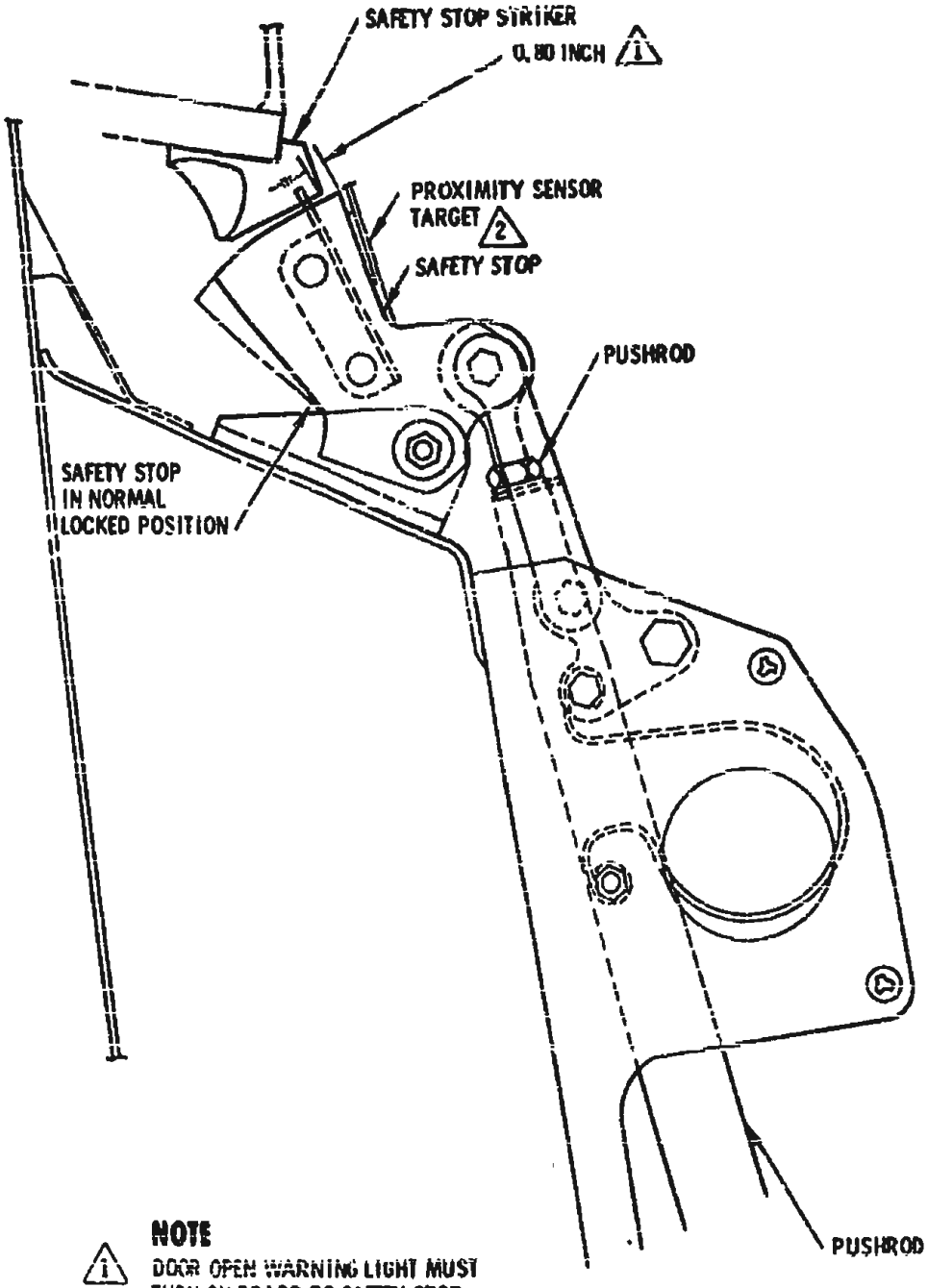


NOTE

1. INBOARD TRAVEL LIMIT OF SAFETY STOP WHEN DOOR OPEN WARNING LIGHT TURNS ON DURING MANUAL UNLOCKING OF LOCK ACTUATOR
2. PROXIMITY SENSOR TARGET CUT AWAY FOR CLARITY

M1-0000-52-489

Safety Stop Proximity Sensor Check
Figure 503 (Sheet 1)



C-1 DOOR

NOTE

1. DOOR OPEN WARNING LIGHT MUST TURN ON PRIOR TO SAFETY STOP REACHING THIS POSITION DURING MANUAL UNLOCKING OF LOCK ACTUATOR. (MEASURED FROM LOWER INBOARD EDGE OF SAFETY STOP STRIKER)
2. PROXIMITY SENSOR TARGET CUT AWAY FOR CLARITY

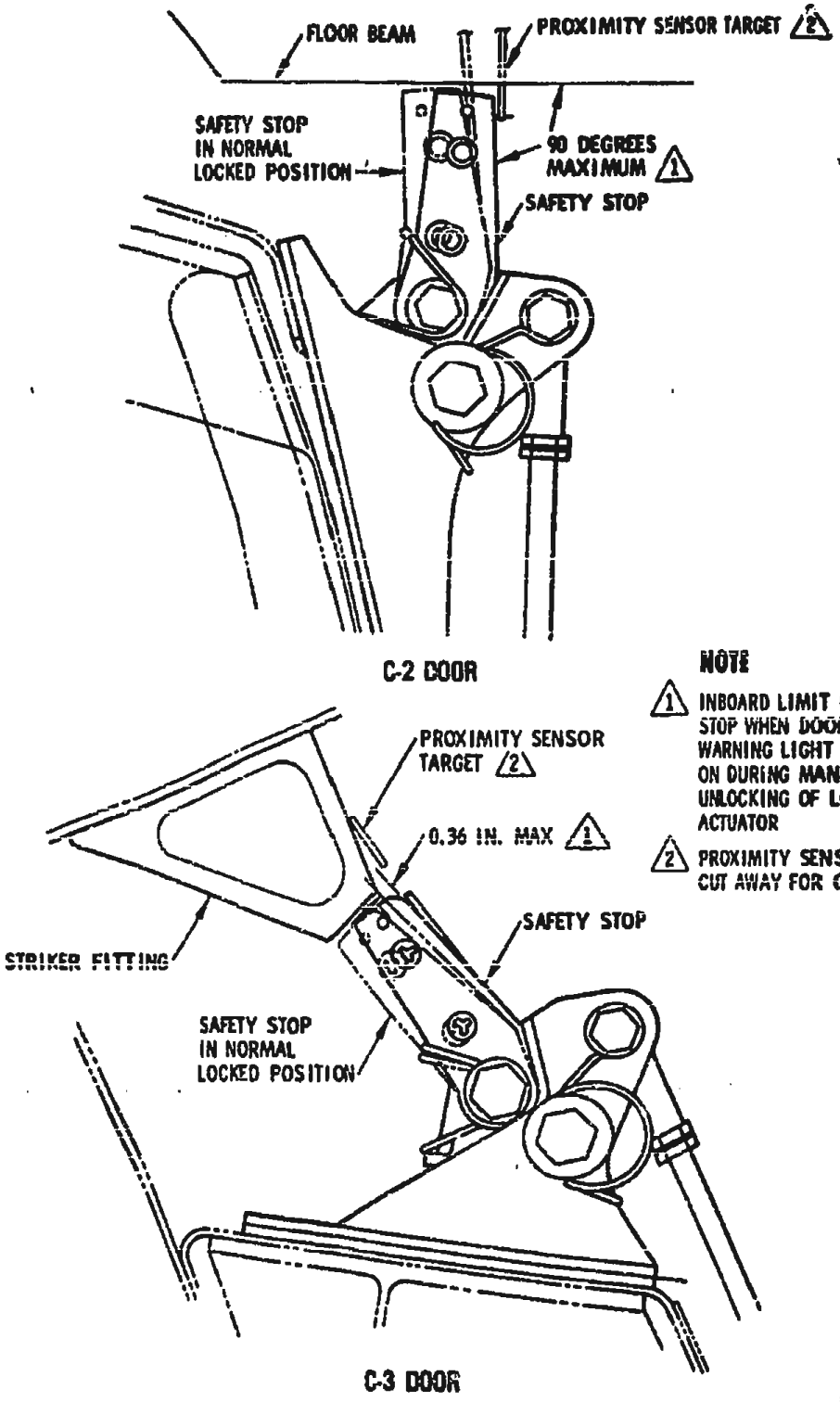
M1-0000-52-976

C
C

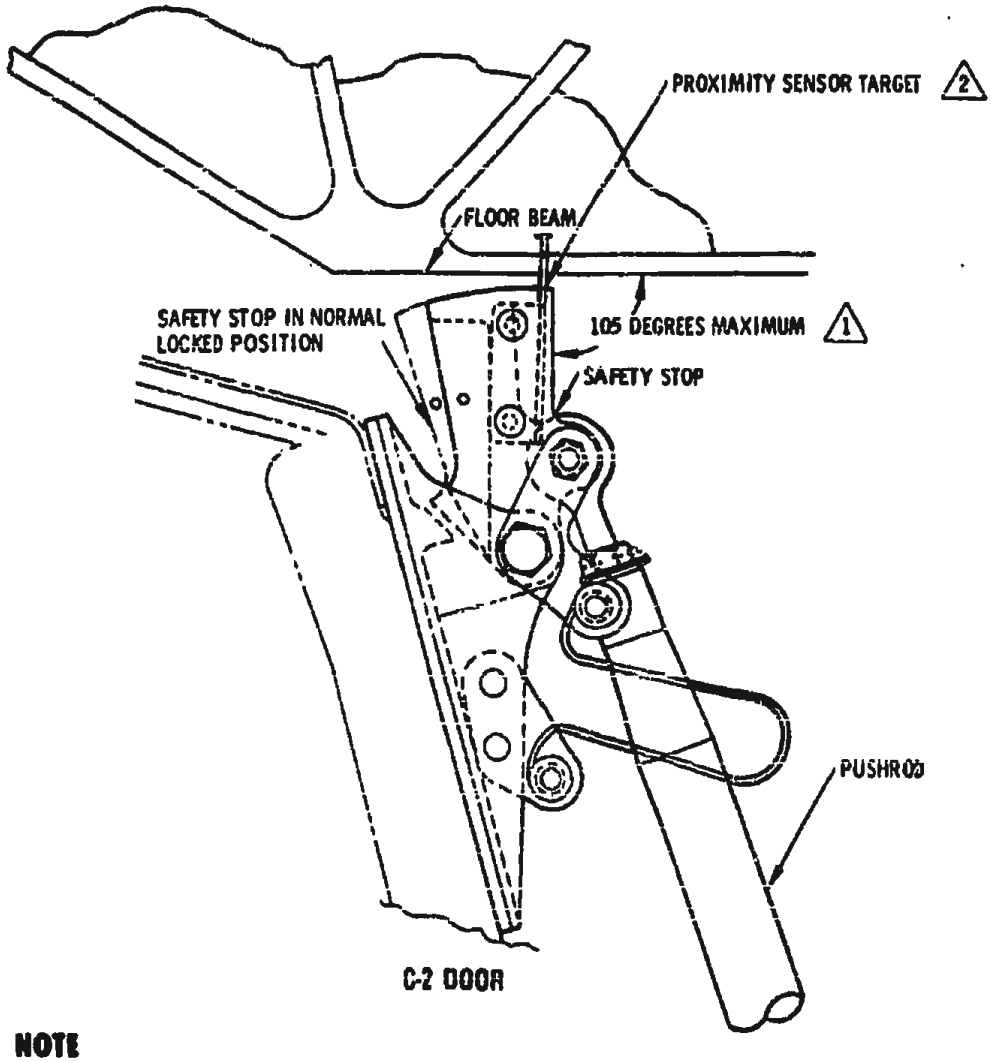
Safety Stop Proximity Sensor Check
Figure 503 (Sheet 1)

R
R
001B

EFFECTIVITY: 002, 014, 032-999


FLOOR BEAM
PROXIMITY SENSOR TARGET 2
SAFETY STOP IN NORMAL LOCKED POSITION
90 DEGREES MAXIMUM 1
SAFETY STOP
C-2 DOOR
PROXIMITY SENSOR TARGET 2
0.36 IN. MAX 1
STRIKER FITTING
SAFETY STOP
SAFETY STOP IN NORMAL LOCKED POSITION
C-3 DOOR
NOTE
1 INBOARD LIMIT OF SAFETY STOP WHEN DOOR OPEN WARNING LIGHT TURNS ON DURING MANUAL UNLOCKING OF LOCK ACTUATOR
2 PROXIMITY SENSOR TARGET CUT AWAY FOR CLARITY
MI-0101-52-487

Safety Stop Proximity Sensor Check
Figure 503 (Sheet 2)



NOTE

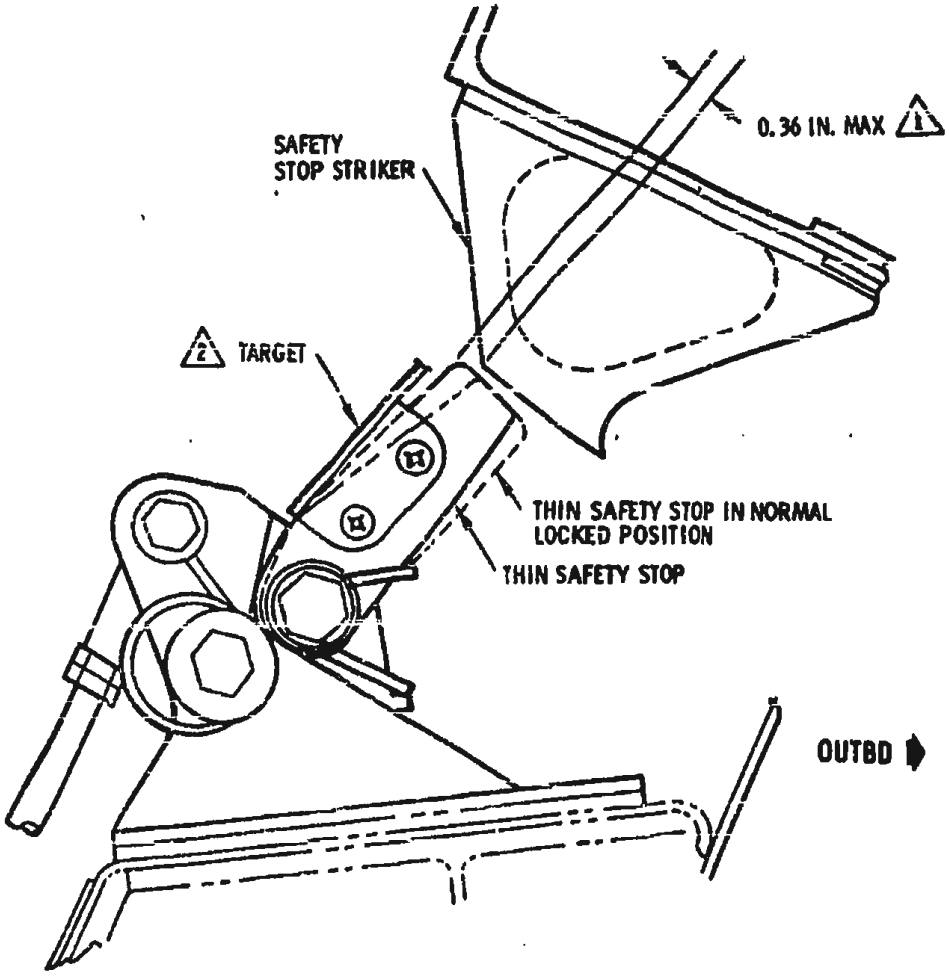
1. DOOR OPEN WARNING LIGHT MUST TURN ON PRIOR TO SAFETY STOP REACHING THIS POSITION DURING MANUAL UNLOCKING OF LOCK ACTUATOR

2. PROXIMITY SENSOR TARGET CUT AWAY FOR CLARITY

M1-0000-52-530

C C Safety Stop Proximity Sensor Check
Figure 503 (Sheet 2)

R R 001B EFFECTIVITY: 002, 014, 032-999



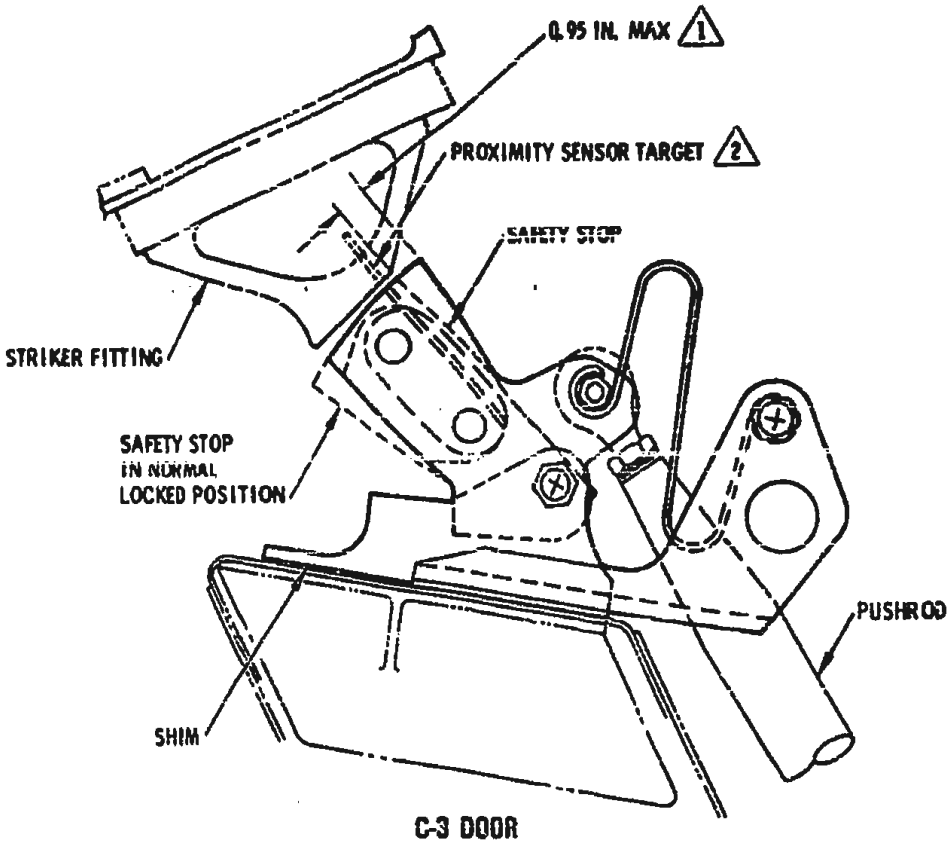
C-3 DOOR

NOTE

1. DOOR OPEN WARNING LIGHT MUST TURN ON PRIOR TO SAFETY STOP REACHING THIS POSITION DURING MANUAL UNLOCKING OF LOCK ACTUATOR. (MEASURED FROM LOWER INBOARD EDGE OF SAFETY STOP STRIKER)
2. PROXIMITY SENSOR TARGET CUT AWAY FOR CLARITY

M1-0000-52-977

Safety Stop Proximity Sensor Check
Figure 503 (Sheet 3)



C-3 DOOR

NOTE

1. DOOR OPEN WARNING LIGHT MUST TURN ON PRIOR TO SAFETY STOP REACHING THIS POSITION DURING MANUAL UNLOCKING OF LOCK ACTUATOR. (MEASURED FROM THE LOWER INBOARD EDGE OF STRIKER FITTING)

2. PROXIMITY SENSOR TARGET CUT AWAY FOR CLARITY

M1-0000-52-531

C C Safety Stop Proximity Sensor Check
Figure 503 (Sheet 3)

FIGURE DELETED

C
C

Safety Step Proximity Check
Figure 504

R EFFECTIVITY: ALL
R
001B

CARGO DOOR PROXIMITY SENSOR - ADJUSTMENT AND TEST

1. General

These procedures outline the steps necessary to adjust the cargo door proximity sensor located at each cargo door.

When an adjustment is made that affects cargo door safety stop position the proximity sensor-to-target gap must be checked.

2. Equipment and Materials

Rig Pin Tool, 1566156-915 or equivalent 0.312 (±0.005) inch rig pin

3. Referenced Procedures

52-30-01	Preparation for Cargo Door Rigging - Inspection and Check
52-30-13	Cargo Door Pressure Stop Bolt and Hooks - Adjustment and Test
52-30-19	Cargo Door Safety Stop - Adjustment and Test
52-31-03	Linear Door Lock Actuator - Removal and Installation

4. Adjustment/Test

A. Proximity Sensor Check

(1) Turn on electrical power and prepare for adjustment (Ref. 52-30-01).

CAUTION: CARE MUST BE EXERCISED WHILE MAINTENANCE IS PERFORMED ON THE CARGO DOOR WITH ELECTRICAL POWER ON THE DOOR OPERATING CIRCUITS.

(2) With workman inside compartment, electrically close, latch, and lock cargo door.

R CAUTION: LOCK ACTUATOR KNOB MUST NOT BE MANUALLY ROTATED
R FURTHER.

(3) Verify that cargo door warning light on FE/SO annunciator panel is out. If not, adjust proximity sensor (Ref. Para. 4B).

(4) With cargo door warning light out, verify that proximity sensor/target gap does not exceed 0.150-inch (cargo door not "wedged"). If it does, adjust proximity sensor (Ref. Para. 4B).

(5) On aircraft with 672406-119 and subsequent dash numbered lock actuator, check lock actuator green light as follows:

(a) Extend the lock actuator and verify that the door unsafe light on the FE/SO annunciator panel is on and that the lock actuator indicator light on the door is out.

(b) Manually retract the lock actuator until the door unsafe light on the FE/SO annunciator panel goes out.

NOTE: At this position, the lock actuator indicator light on the door shall still be out.

(c) Fully retract the lock actuator manually.

(d) Verify that the lock actuator indicator light on the door is on.

B. Proximity Sensor Adjustment

(1) Prepare for proximity sensor adjustment (Ref. Para. 4A, Steps (1) and (2).

(2) Install wedges to simulate door pressurized condition. Install wedges between ditch stops on door and pressure fitting on surround structure at the four extreme corner locations (Ref. 52-30-13, Figure 504). Wedge as necessary to maintain firm contact between pressure stop bolts and wear pads at four corner locations. For repeatability of rigging clearances wedges must be inserted in the following order:

R

(a) Upper forward corner

(b) Upper aft corner

(c) Lower forward corner

(d) Lower aft corner

NOTE: If additional "wedging" information is required refer to 52-30-13, Para. 4F, Step (5).

(3) Manually drive lock actuator toward locked (fully retracted) position until clutch slips.

(4) Insert rig pin through rig pin hole in latch support bracket and lever locking latch.

NOTE: If rig pin cannot be installed, verify that lock actuator is properly installed (Ref. 52-31-03).

(5) Verify that safety stop is in locked position (Ref. 52-30-19).

(6) Adjust proximity sensor-to-target clearance as follows:

CR CR CR NOTE: The following is an initial adjustment. Final adjustment is accomplished after the wedges have been removed (Ref. Step (9)).

(a) Loosen two sensor support screws to slide sensor in elongated slots on support fitting (Ref. Fig. 501).

NOTE: At C-2 door, sensor support tee bracket slides on channel in elongated holes.

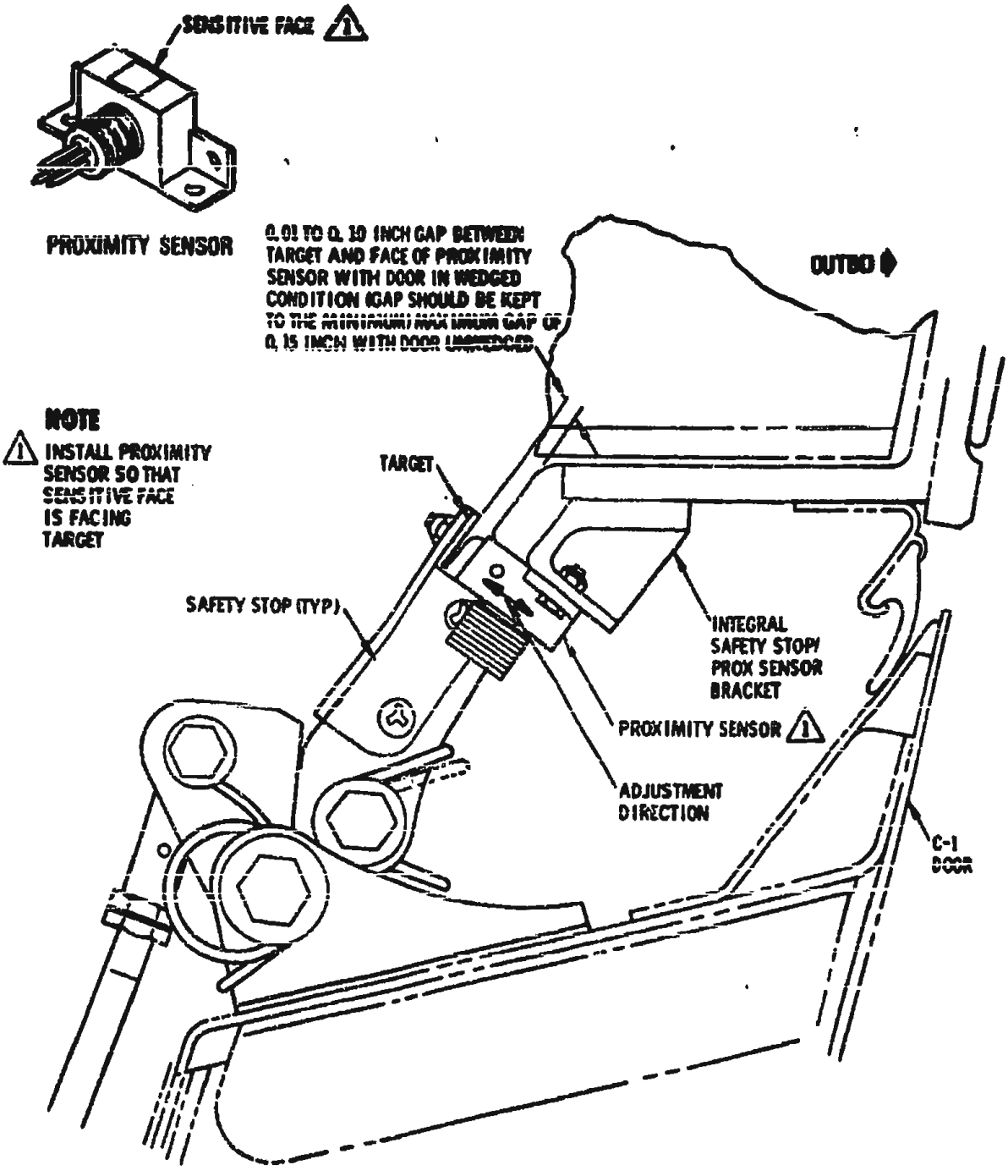
(b) Adjust for a clearance between sensor and target as close as possible to 0.010 inch, but by no means greater than 0.10 inch, and then tighten sensor support screws.

NOTE: The preferred clearance of close to 0.010 inch is only valid when door is properly wedged. When wedges are removed, this clearance will increase, but will be well within tolerance.

(7) Remove wedges and rig pin.

(8) Verify that cargo door warning light on FE/SO annunciator panel is out, and that proximity sensor/target gap does not now exceed 0.150 inch.

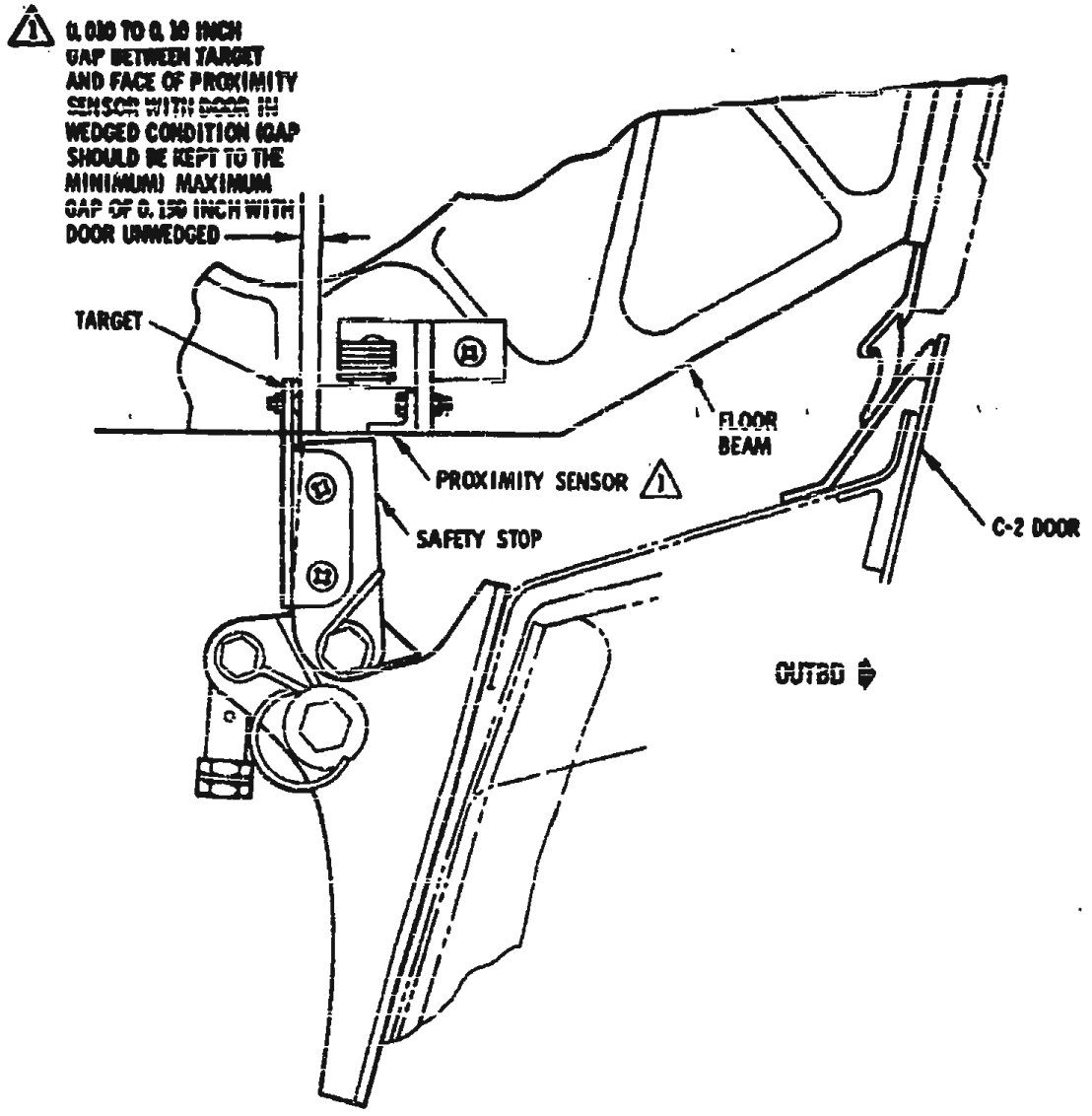
(9) Perform safety stop/proximity sensor check (Ref. 52-30-19).


SENSITIVE FACE
1
PROXIMITY SENSOR
0.01 TO 0.10 INCH GAP BETWEEN TARGET AND FACE OF PROXIMITY SENSOR WITH DOOR IN WEDGED CONDITION (GAP SHOULD BE KEPT TO THE MINIMUM) MAXIMUM GAP OF 0.15 INCH WITH DOOR UNWEDGED
OUTBD
NOTE
1 INSTALL PROXIMITY SENSOR SO THAT SENSITIVE FACE IS FACING TARGET
TARGET
SAFETY STOP (TYP)
INTEGRAL SAFETY STOP/ PROX SENSOR BRACKET
PROXIMITY SENSOR 1
ADJUSTMENT DIRECTION
C-1 DOOR

C-1 CARGO DOOR
(VIEW LOOKING FORWARD)

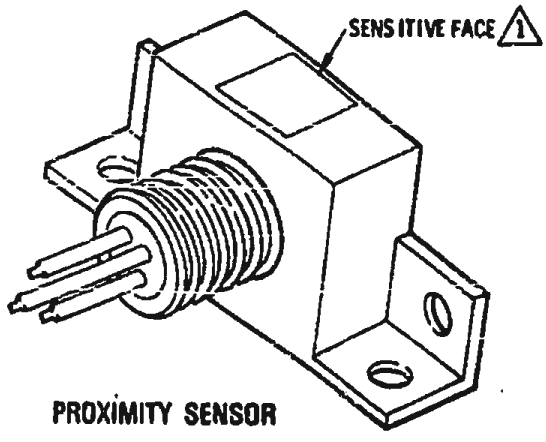
M1-002-52-438

C-1 Cargo Door Proximity Sensor Adjustment
Figure 501


1 0.010 TO 0.10 INCH GAP BETWEEN TARGET AND FACE OF PROXIMITY SENSOR WITH DOOR IN WEDGED CONDITION (GAP SHOULD BE KEPT TO THE MINIMUM) MAXIMUM GAP OF 0.150 INCH WITH DOOR UNWEDGED
TARGET
FLOOR BEAM
PROXIMITY SENSOR 1
SAFETY STOP
C-2 DOOR
OUTBD

C-2 CARGO DOOR

(VIEW LOOKING FORWARD)



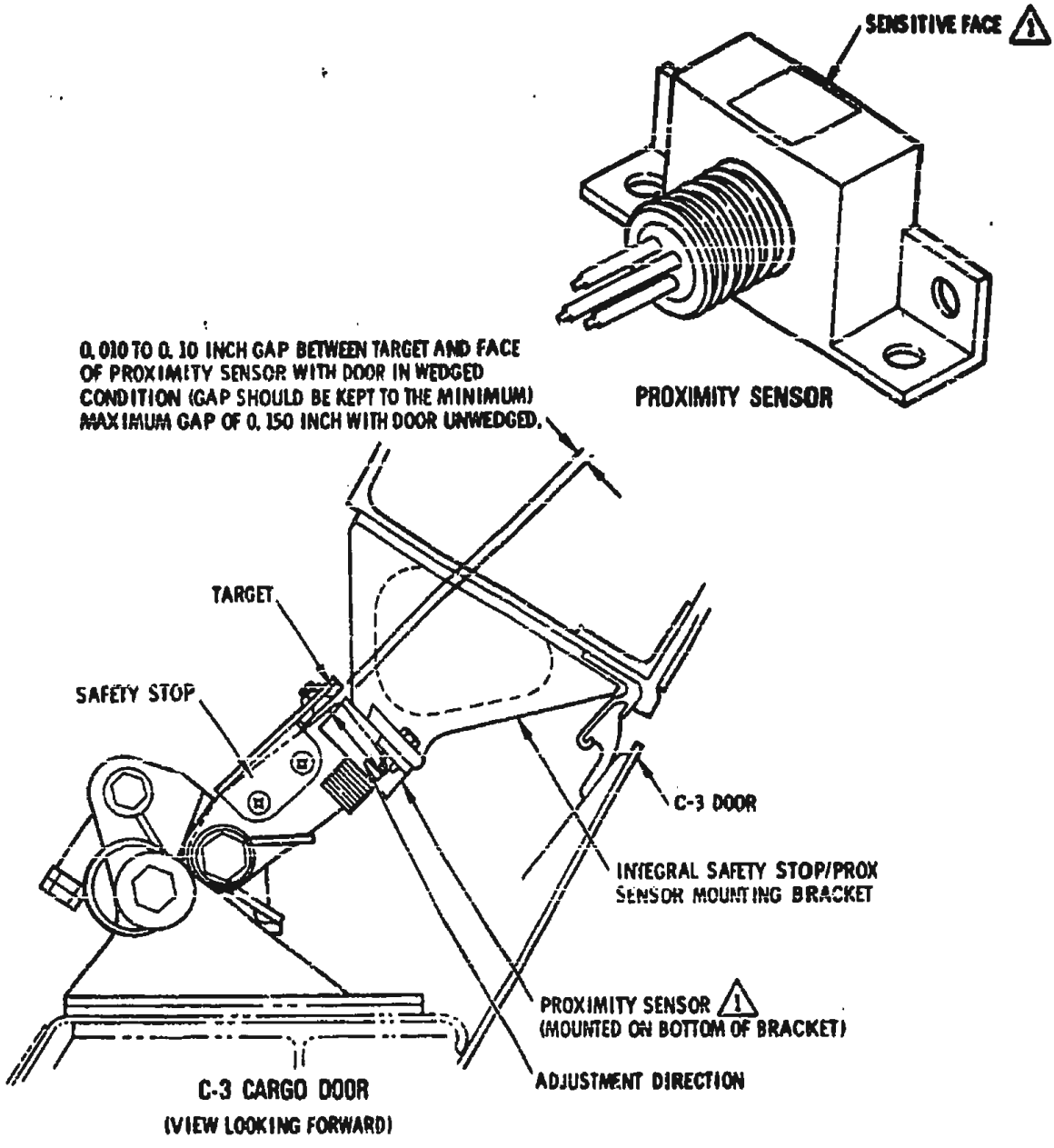
PROXIMITY SENSOR

NOTE

1 INSTALL PROXIMITY SENSOR SO THAT SENSITIVE FACE IS FACING TARGET

M1-0003-52-452

C-2 Cargo Door Proximity Sensor Adjustment
Figure 502

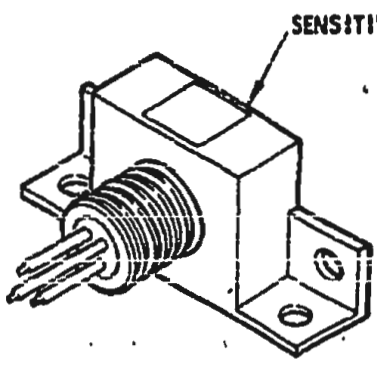

SENSITIVE FACE 1
PROXIMITY SENSOR
0.010 TO 0.10 INCH GAP BETWEEN TARGET AND FACE OF PROXIMITY SENSOR WITH DOOR IN WEDGED CONDITION (GAP SHOULD BE KEPT TO THE MINIMUM) MAXIMUM GAP OF 0.150 INCH WITH DOOR UNWEDGED.
TARGET
SAFETY STOP
C-3 DOOR
INTEGRAL SAFETY STOP/PROX SENSOR MOUNTING BRACKET
PROXIMITY SENSOR 1 (MOUNTED ON BOTTOM OF BRACKET)
ADJUSTMENT DIRECTION
C-3 CARGO DOOR
(VIEW LOOKING FORWARD)

NOTE

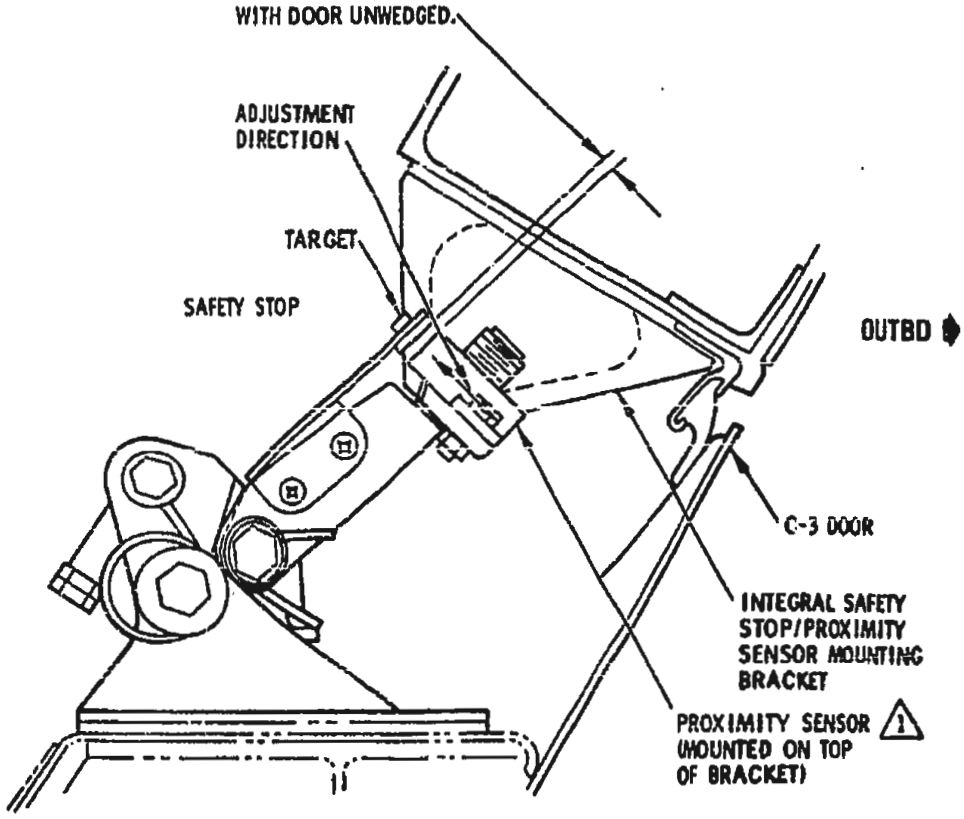
1 INSTALL PROXIMITY SENSOR SO THAT SENSITIVE FACE IS FACING TARGET

M1-0004-52-425

C-3 Cargo Door Proximity Sensor Adjustment
Figure 503



PROXIMITY SENSOR


0.010 TO 0.10 INCH GAP BETWEEN TARGET AND FACE OF PROXIMITY SENSOR WITH DOOR IN WEDGED CONDITION (GAP SHOULD BE KEPT TO THE MINIMUM) MAXIMUM GAP OF 0.150 INCH WITH DOOR UNWEDGED.
ADJUSTMENT DIRECTION
TARGET
SAFETY STOP
OUTBD
C-3 DOOR
INTEGRAL SAFETY STOP/PROXIMITY SENSOR MOUNTING BRACKET
PROXIMITY SENSOR (MOUNTED ON TOP OF BRACKET) 1

C-3 CARGO DOOR
(VIEW LOOKING FORWARD)

NOTE

1 INSTALL PROXIMITY SENSOR SO THAT SENSITIVE FACE IS FACING TARGET

M1-0004-52-285

R C-3 Cargo Door Proximity Sensor Adjustment
R Figure 503

EFFECTIVITY: 001-031 WITH SB52-140 AND 032-999

001B

CARGO DOOR FULL OPEN - ADJUSTMENT AND TEST

1. General

This procedure describes adjustment of a cargo door to the full open position. This is required to assure that cargo containers can be loaded into a cargo compartment without contact damage to the cargo door lifting mechanism. It will also assure that the lifting mechanism will not raise the door high enough to damage door seals or seal retainers.

2. Referenced Procedure

52-30-01 Preparation for Cargo Door Rigging - Inspection and Check

52-34-01 Lift Actuator - Removal and Installation

3. Adjustment/Test

A. Adjustment

(1) Prepare for door electrical operation and turn on electrical power (Ref. 52-30-01).

(2) Adjust door to full open position as follows:

CAUTION: DOOR LIFTING ARMS MUST NOT STRIKE DOOR OPEN BUMPERS OR UPPER SEAL RETAINERS.

NOTE: Door open bumpers are located in the upper sill area above the forward lifting arm in each cargo compartment.

R
R

(a) When door is in correct full open position the stabilizer link rods should be flush with, or above, the lower flat horizontal surface of the lifting arms (Ref. Fig. 501).

(b) Remove hex plug and O-ring from lower side of lift actuator to expose the switch adjustment screw located on the lift actuator cam shaft assembly (Ref. Fig. 502).

NOTE: Adjustment screw is located approximately one inch inside the actuator case and can be seen with the aid of a flashlight.

R CAUTION: MAKE ADJUSTMENTS IN SMALL INCREMENTS TO AVOID GETTING ACTUATOR COMPLETELY OUT OF ADJUSTMENT.

(c) Adjust door opening by rotating switch adjustment screw 1/4 turn with screwdriver. Operate door to check effect of each adjustment.

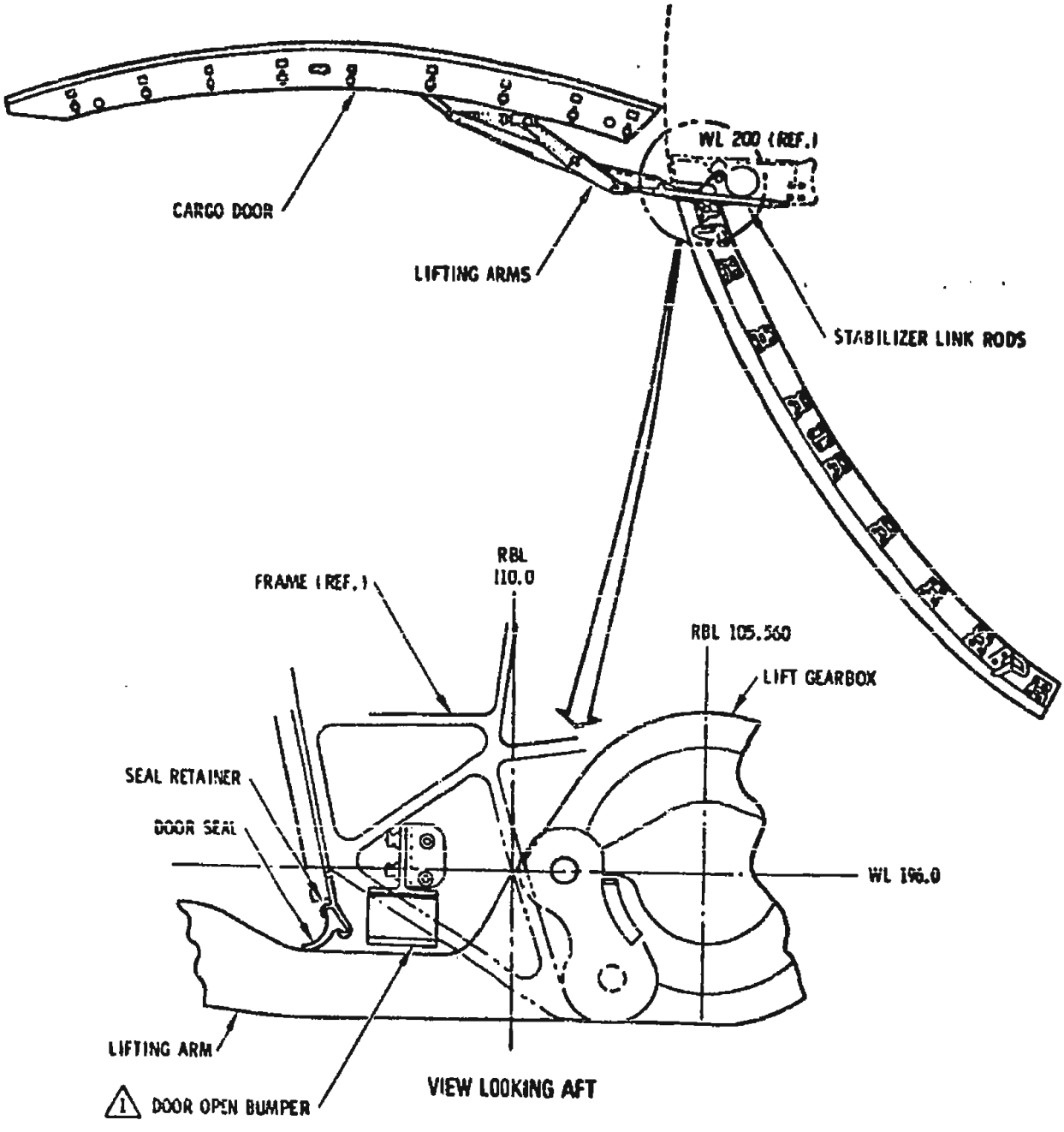
NOTE: Clockwise screw rotation decreases output stroke (door opens less). Counterclockwise rotation increases the output stroke (door opens more). One complete turn of adjustment screw changes door opening angle 4.25 degrees.

If door cannot be raised high enough by using adjustment screw, actuator torque shafts may not have been properly installed in the door closed position (Ref. 52-34-01).

(d) Operate door closed, latched and locked. Operate door full open and recheck door [Ref. Step(2)(a)].

(e) Install O-ring and plug. Lock-wire plug to switch gear case cover screw.

(3) Turn off electrical power.



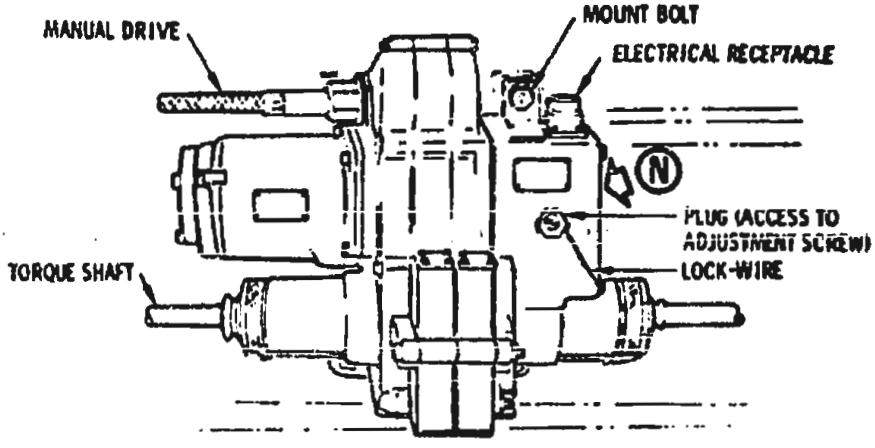
NOTE

1 LOCATED ABOVE FORWARD LIFTING ARM ONLY

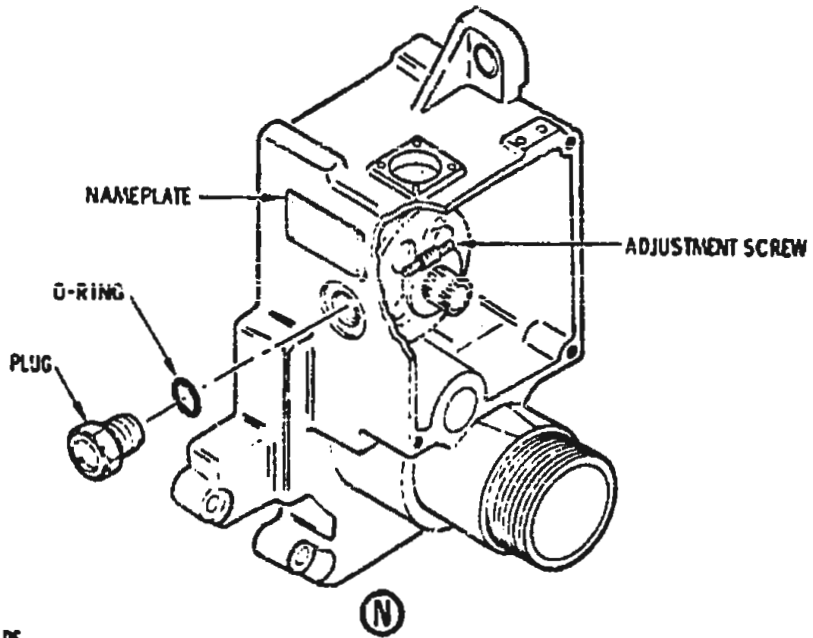
MI-0100-52-505

R R Cargo Door Open Bumper
Figure 501

R EFFECTIVITY: ALL
R
001B



BOTTOM VIEW OF LIFT ACTUATOR (AS MOUNTED)



SWITCH MOUNT GEAR CASE ASSEMBLY

NOTE

THIS CUTAWAY VIEW INTENDED ONLY TO SHOW ADJUSTMENT SCREW LOCATION INSIDE CASE. CAMS AND SWITCHES OMITTED FOR CLARITY

M1-0102-52-179

R
R

Cargo Door Full Open Adjustment
Figure 502

EFFECTIVITY: ALL

0018

R CARGO DOOR UNLOCK SWITCH - ADJUSTMENT AND TEST

R 1. General

R These procedures cover the operational check and adjustment of
R the door unlock switch and handle assembly.

R The door unlock switch is actuated by a handle located on the
R outside of the door.

R The unlock switch is used only in the door unlocking sequence.
R Door unlocking is initiated by manually rotating the handle to
R the UNLOCK position and holding it eight to ten seconds (or
R until actuator stops running). The lock actuator indicating
R (green) light should go out when the lock actuator starts to
R extend.

R Normal door closing, latching and locking operation is performed
R by use of the cargo door control switch.

R 2. Referenced Procedure

R 52-34-00 Cargo Door Actuation System - Adjustment and Test

R 3. Adjustment/Test

R A. Operational Check

R (1) Verify operation of unlocking switch as follows:

R (a) Prepare door for electrical operation (52-34-00).

R (b) With a man inside the cargo compartment, close and
R lock cargo door.

R (c) Rotate handle slowly and note position of arm when
R lock actuator starts to extend. From its initial
R position (Ref. Fig. 501), the arm must move 25
R (±10) degrees before lock actuator starts to
R operate.

R B. Switch Adjustment

R (1) If adjustment is required to meet the above requirement
R proceed as follows:

R (a) Remove cotter pin, pin, and washer which connect
R rod assembly to arm.

(b) Loosen rod end-bearing and lengthen or shorten rod assembly as required to meet arm rotation requirement [Ref. Step A(1)(c)].

(c) When rod assembly is properly adjusted, tighten jamnut, and lock-wire.

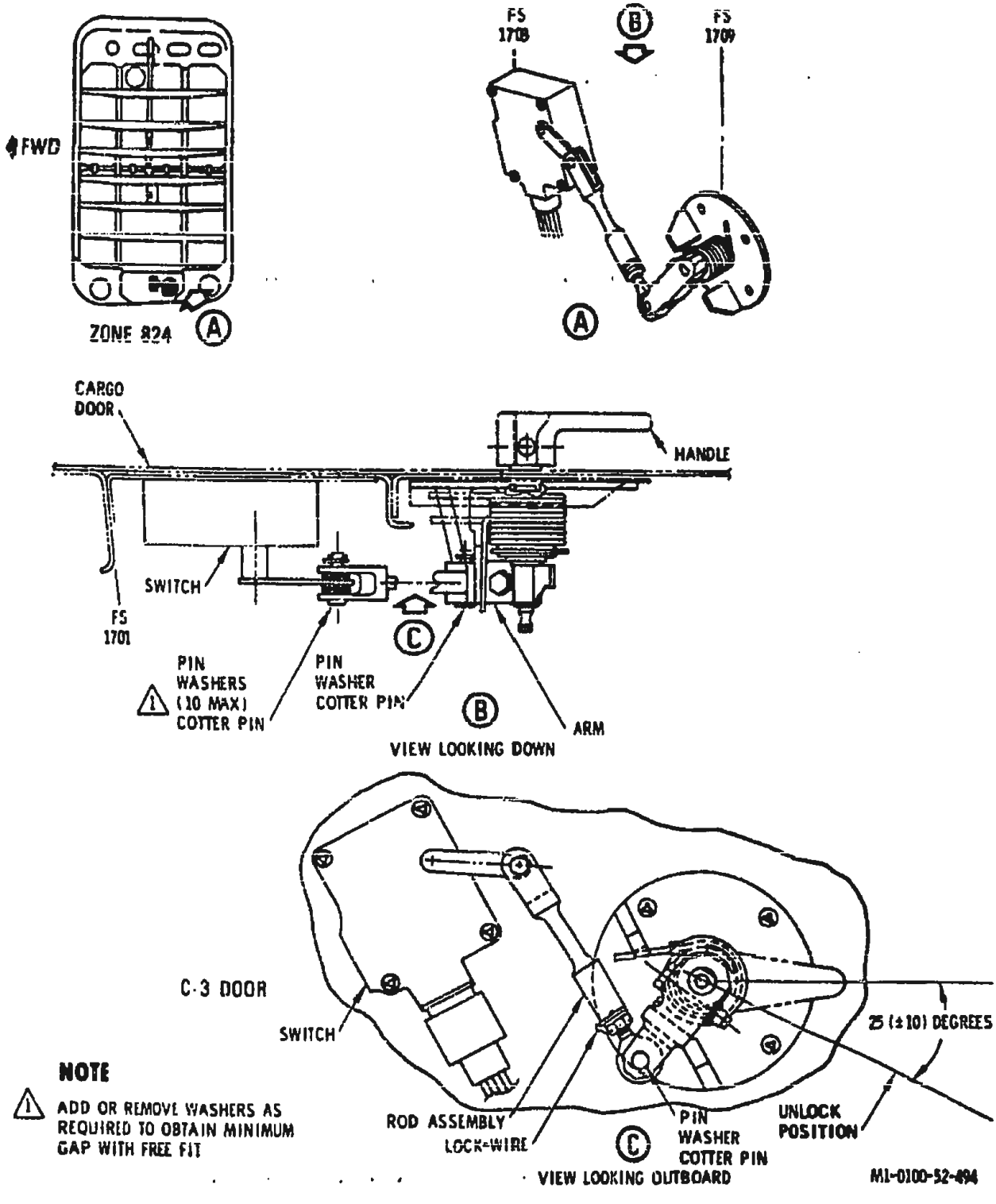
(d) Connect rod assembly to arm using pin, washer and cotter pin.

(2) Operate lock actuator to fully extend and retract. Verify that lock actuator (green) indicating light on cargo door comes on as lock actuator reaches fully retracted (locked) position.

R (3) Open cargo door for access, if required.

R (4) Install cargo door inner liner, if removed for access.

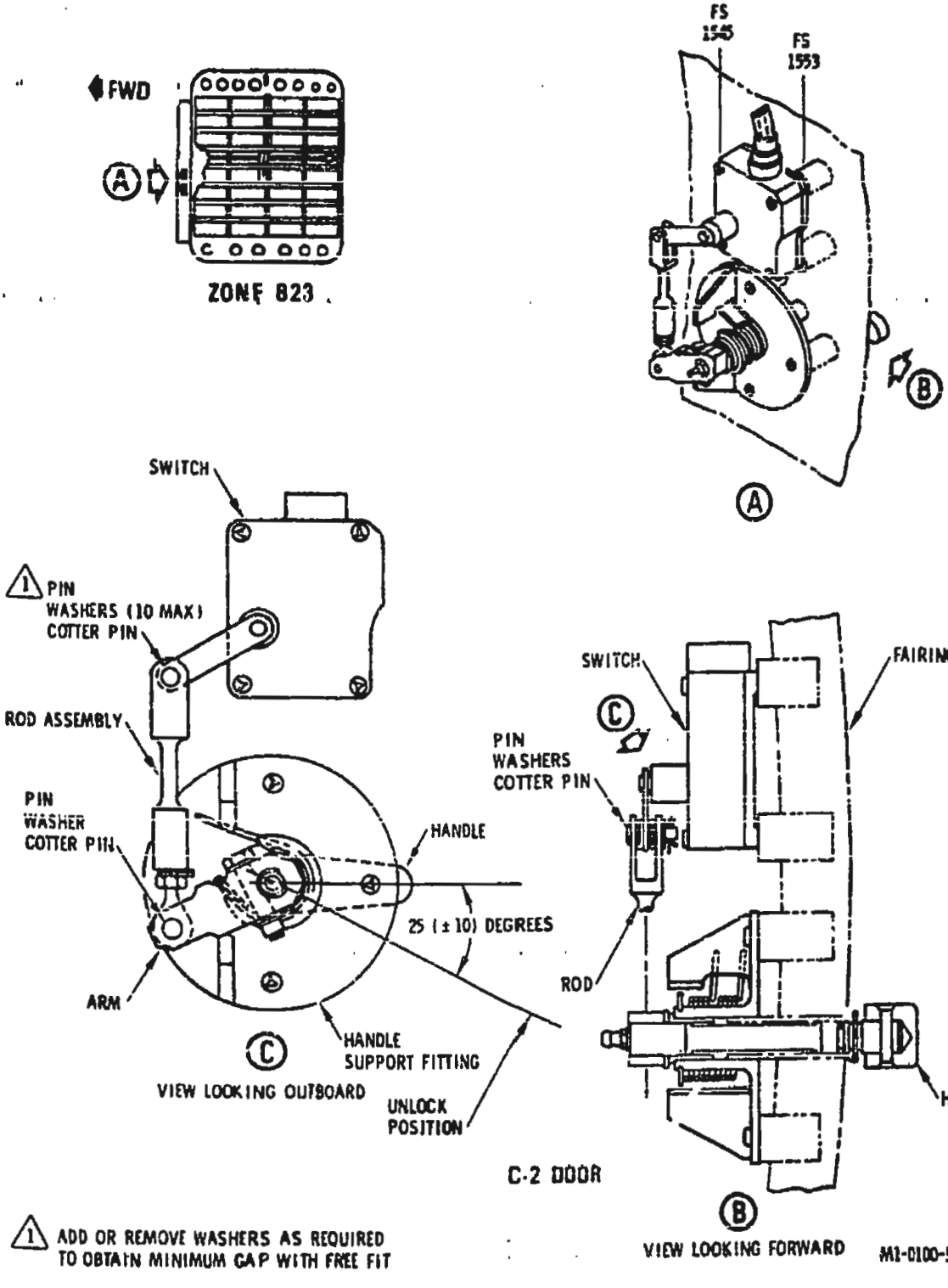
R (5) Close cargo door.



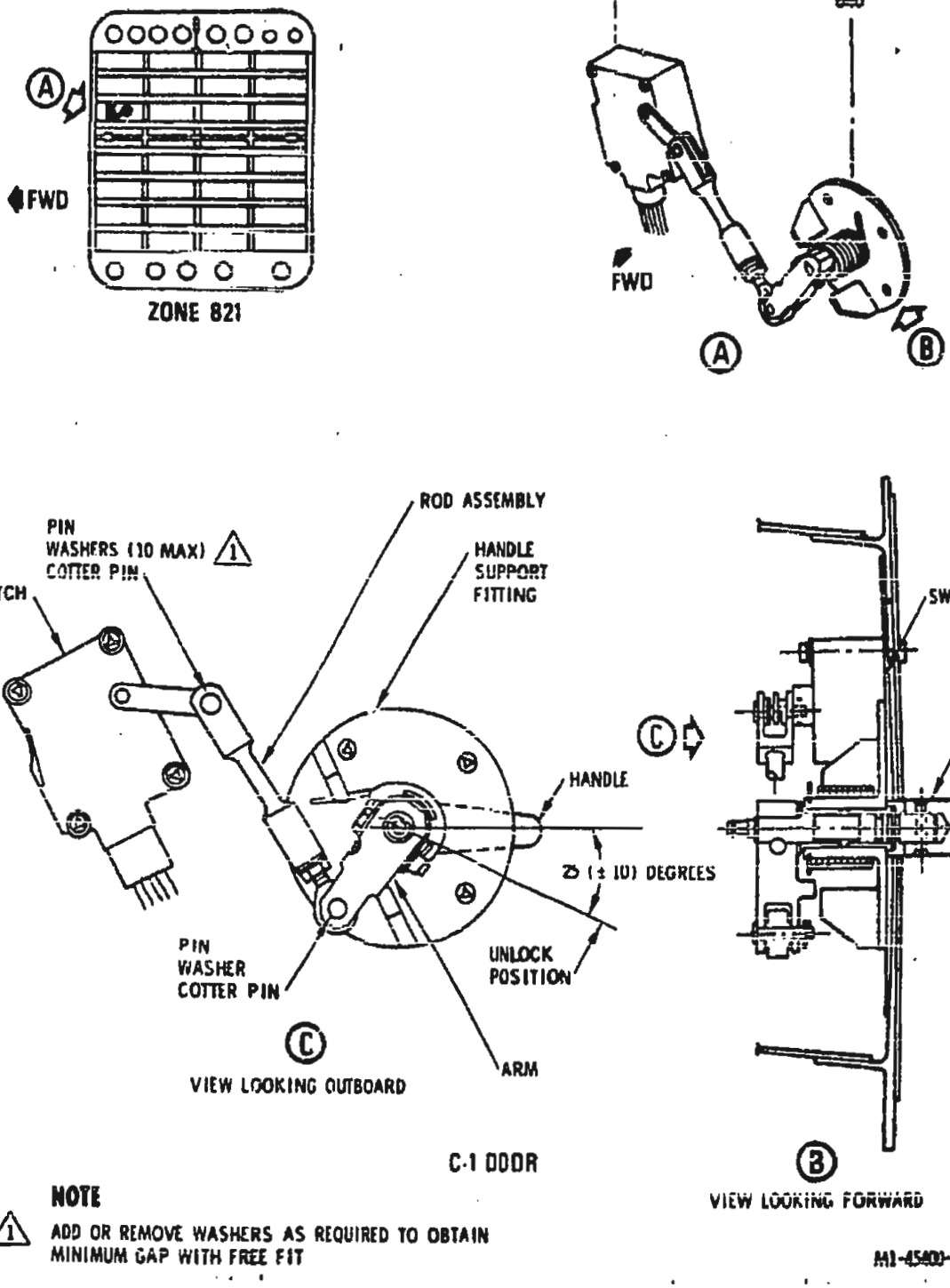
NOTE

⚠ ADD OR REMOVE WASHERS AS REQUIRED TO OBTAIN MINIMUM GAP WITH FREE FIT

Cargo Door Unlock Switch
Figure 501 (Sheet 1)



Cargo Door Unlock Switch
Figure 501 (Sheet 2)



Cargo Door Unlock Switch
Figure 501 (Sheet 3)

R CARGO DOOR MAINTENANCE COMPLETION - INSPECTION AND CHECK

R 1. General

R This procedure is intended to serve as a guide to inspection of
R the cargo door and related components on the door and on
R structure around the door after completion of the various
R maintenance procedures. The checks described here should be
R used as appropriate to the maintenance performed.

R 2. Referenced Procedure

R 52-34-00 Cargo Door Actuation System - Adjustment and Test

R 3. Inspection/Check

R A. Cargo Door Structure Security Check

R With door liners removed, check all structural components
R for condition and security of mounting as follows (Ref. Fig.
R 601):

R (1) Seal strikers for damage or distortion.

R (2) Door beams for damage and evidence of corrosion. If
R there is evidence of accumulated water, verify that
R drain holes along the bottom of the door beams are
R open.

R (3) Pressure stops and ditch stops for evidence of
R scratches or abrasion.

R NOTE: This type damage usually results from contact
R with surround structure pressure stops during
R closing and latching sequences if door is
R improperly rigged.

R (4) Verify that pressure stop adjusting bolt wire-locks are
R installed.

R (5) Upper and lower hooks for damage and security of
R mounting.

R (6) Upper and lower guide rollers and latch cranks.

R (a) Check all guide rollers for security, corrosion
R and freedom of movement.

(b) Check latch cranks for security, and rollers for freedom of movement.

(7) Check bottom of door, and interfacing door sill area for evidence of wear caused by interference in door closed and latched position. Correct condition if interference is detected.

(8) On C-2 door verify that fairing is free of damage, fairing support structure is free of cracks, and all fairing attachment fasteners are installed.

B. Cargo Door Component check

Verify that the following items are installed and securely mounted as follows:

(1) Latch and lock actuators for security of mounting. Check that electrical harness is properly supported and connectors connected to actuators.

(2) Verify that manual drive cables are installed, free of damage, and lock-wired.

(3) Check door closed limit switch for:

(a) Condition of switch arm and roller.

(b) Condition of activator, and verify jam nuts lock-wired.

(c) Electrical harness for condition and mounting.

(d) Door unlock switch for condition and security of mounting. Check jam nuts, cotter pins, and lock-wire.

(e) Cargo loading light and wiring harness for condition and security of mounting when applicable.

(4) Door electrical connector.

(a) Aircraft-to-door electrical connector attached to receptacle.

(b) Electrical harness for condition and security of mounting.

(5) Lock actuator indicating light.

(a) Light for condition.

(b) Electrical harness for condition and security of mounting.

(6) Torque tube, lifting cams and related components.

(a) Check for security of mounting and lock-wire.

(b) Check for freedom from corrosion.

(c) Check latch crank stop bolt for lock-wire.

(7) Safety stop.

(a) Check that mount bracket is securely mounted.

(b) Check safety stop assembly for condition, and security.

(8) Safety stop push-pull cable (aircraft without SB52-122, push-pull cable replaced by push rod).

(a) Check condition. Must be free of kinks, or damage.

(b) Verify that jam nuts are installed and lock-wired at each end of cable, and support clamp installed at intermediate location.

(c) Fasteners installed and lock-wired.

(8) Safety stop push rod (aircraft with SB52-122).

(a) Check condition. Must not be dented, bent or damaged.

(b) Verify that push rod jam nuts are installed, tightened and lock-wired at each end.

(9) Proximity sensor.

(a) Check proximity sensor wiring and fasteners for security of mounting.

(b) Check proximity target and fasteners for security of mounting.

C. Cargo Door Lifting Mechanism check

(1) Check the following components of the door lifting mechanism for condition, security of mounting, and safties (Ref. Fig. 602).

(a) Adjusting link rod jam nuts.

(b) Drag link rod jam nuts.

(c) Pivot link jam nuts.

(d) Lock-up links.

(e) Stabilizer link jam nuts, and cotter pins.

(f) Rig link jam nuts.

(g) Lift actuator mount bolts.

(h) Lift actuator manual drive cable nuts for lock-wire.

(i) Lift actuator uplock push-pull cable for condition, security of mounting, and installation of lock-wire, and cotter pins as required.

(j) Gearbox for security of mounting and lock-wire.

(k) Lift actuator torque shaft couplings for lock-wire.

(l) Truss assemblies for damage and security of mounting.

D. Door Surround Structure Check

(1) Check the following for condition, security of mounting, and cleanness as described:

(a) Sill area free of water and debris, verify water drains are open.

(b) Upper and lower roller guides and lifting cams.

(c) Pressure stop pads installed and aligned properly, free of damage.

(d) Safety stop striker fitting, located above safety stop, for security of mounting and damage.

(e) Seal retainer and seal all around door free of damage. Lower seal retainer free of trapped water and debris.

(f) Proximity sensor for condition and security of mounting.

E. Final Check

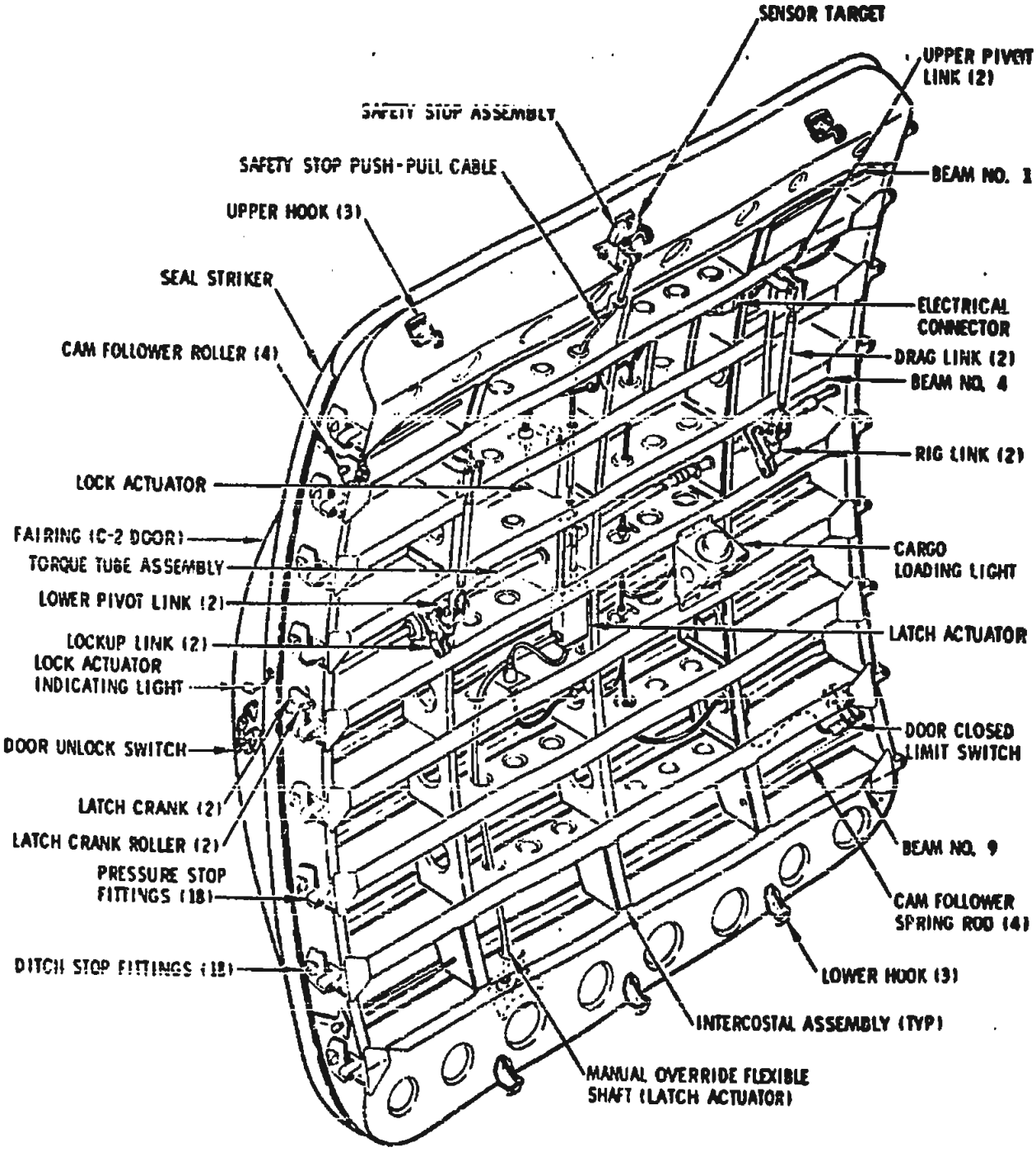
(1) Verify the following items before completing check.

(a) Verify that rig pin, or equivalent is removed from lever locking latch.

(b) All door liners installed.

(c) All access and cover plates installed.

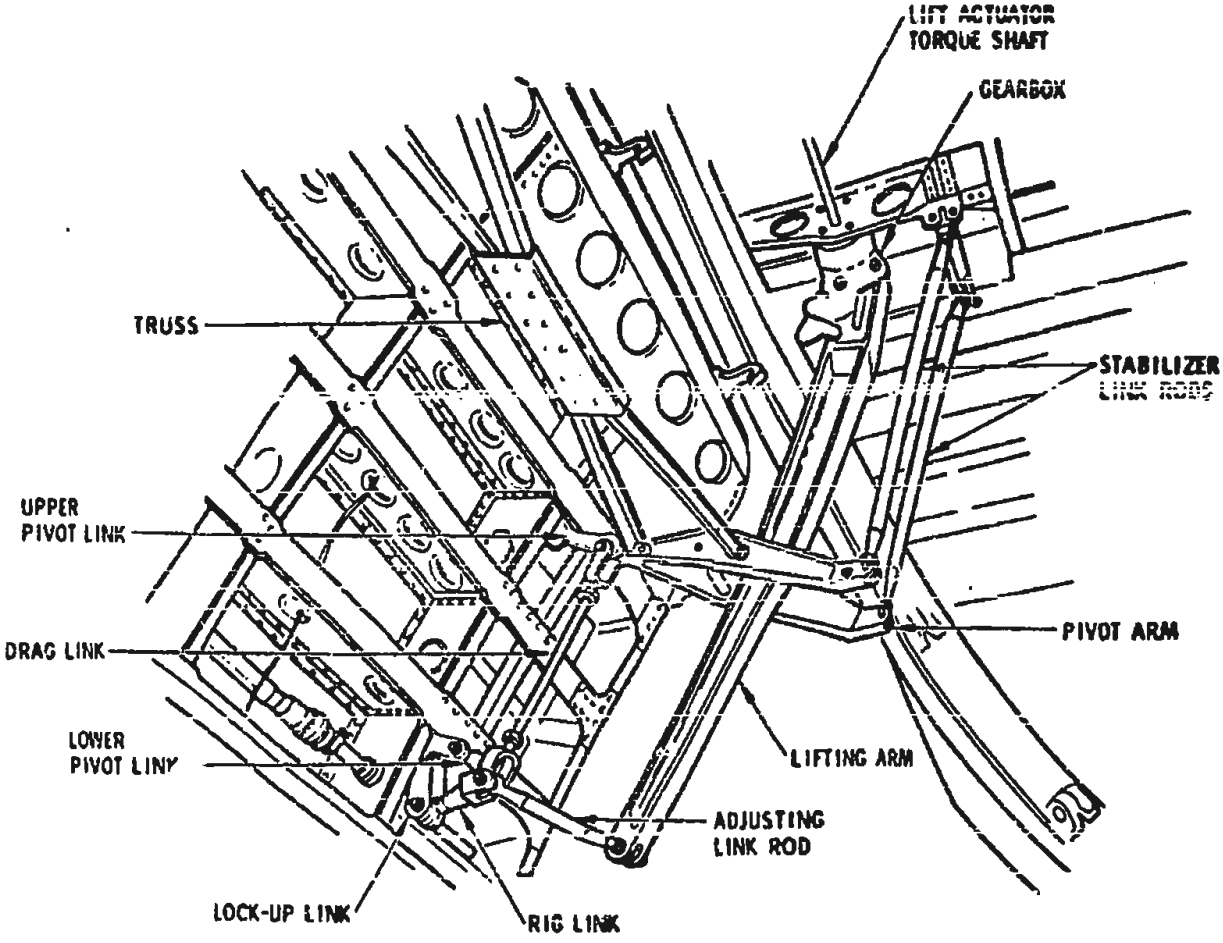
(2) Verify cargo door operation (Ref. 52-34-00, 501).



M1-0100-52-007

R
R

Cargo Door Inspection and Check
Figure 601



M1-0101-52-034

R
R

Cargo Door Lifting Mechanism Check
Figure 602

EFFECTIVITY: ALL

001B

CARGO COMPARTMENT DOOR - REMOVAL AND INSTALLATION

1. General

These procedures provide instructions for removal of the C-3, C-2, and C-1 cargo doors. If the same door is to be reinstalled refer to Paragraph 4B. If a door other than the one removed is to be installed, refer to Paragraph 4C.

2. Equipment and Materials

General Purpose Sling, PN B715, or equivalent

Door support dolly with protective padding

Protective caps

3. Referenced Procedures

	52-30-04	Cargo Door Closing Check - Adjustment and Test
R	52-30-07	Cargo Door Latching - Adjustment and Test
	52-30-13	Cargo Door Pressure Stop Bolt and Hooks - Adjustment and Test
	52-30-19	Cargo Door Safety Stop - Adjustment and Test
	52-30-22	Cargo Door Proximity Sensor - Adjustment and Test
	52-30-25	Cargo Door Full Open - Adjustment and Test
	52-30-28	Cargo Door Unlock Switch - Adjustment and Test
	52-30-31	Cargo Door Maintenance Completion - Inspection and Check
	52-31-03	Door Lock Actuator - Removal and Installation
	52-31-05	Cargo Door Seal - Removal and Installation
	52-31-07	Door Liner - Removal and Installation
	52-31-08	Door Latching Actuator - Removal and Installation
R R	52-31-16	Cargo Door Closed Limit Switch - Adjustment and Test

52-34-00 Cargo Door Actuation System - Adjustment and Test

52-34-01 Cargo Door Lift Actuator - Removal and Installation

4. Removal/Installation

A. Removal

(1) Remove door liner (Ref. 52-31-07).

(2) Open door to fully open position or to position where sling can be attached to door (Ref. 52-34-00).

WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

R R R (3) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(4) Disconnect electrical connector on door (Ref. Fig. 401). Install protective cap.

(5) Attach general purpose sling to door.

(6) Adjust sling cables to allow door to be lifted vertically.

(7) Take up slack on sling without putting any load on door opening mechanism.

(8) Remove pivot bolts and pivot shims holding pivot arms and upper pivot links at points A (Ref. Fig. 401, View A). Identify position of shims and retain shims in groups as removed for reinstallation.

(9) Remove pivot bolts and pivot shims holding adjusting link rods, lower pivot links, and drag link rods at points B (Ref. Fig. 401, View B). Identify and retain shims in groups as removed.

(10) Raise door to clear opening machanism and aircraft.

(11) Lower door to door support dolly.

B. Reinstallation of Door Removed

(1) Verify that opening mechanism is extended to door open position.

R WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(2) Verify that circuit breakers opened in Step 4A(3) are open and tagged.

(3) Verify that door latching mechanism is in unlatched position.

(4) Raise door to installation position above opening mechanism, using general purpose sling.

(5) Adjust length of sling straps to permit upper and lower pivot links to mate with opening mechanism.

(6) Attach pivot links to opening mechanism and drag links with pivot bolts, pivot shims and nuts. Replace shims in groups indentified in Steps 4A(8) and 4A(9).

(7) Install cotter pins in pivot bolt nuts.

(8) Connect electric plug on door receptacle.

(9) Remove tags and close circuit breakers opened in Step 4A(3).

(10) Verify door operation (Ref. 52-34-00).

R (11) Install door liner (Ref. 52-31-07).

(12) Close door.

C. Installation of New Door

(1) Prepare door for installation as follows:

(a) Remove upper liner and access doors from lower hard liner (Ref. 52-31-07).

(b) Remove exterior access panel from cargo door.

NOTE: This is required for communication between personnel working outside the door with personnel in the closed cargo compartment, and for ventilation, or emergency door opening procedures.

(c) Door latch actuator installed (Ref. 52-31-08), and in latched position.

(d) Door lock actuator installed (Ref. 52-31-03), and in unlocked position.

(e) Remove forward and aft lifting cam fittings from door surround structure.

(f) Remove door upper and lower hook fittings.

(g) Remove wire locks from all pressure stop adjusting bolts, and back off bolts until flush with outboard face of pressure stop fittings. Retain wire locks.

(2) Verify that the following steps have been performed on the door surround area.

(a) Door seal installed (Ref. 52-31-05).

(b) Verify lengths of stabilizer link rods. Measurements from bearing center to bearing center are (Ref. Fig. 401):

C-3 door 29.47 (±0.010) inch.

C-2 door 28.87 (±0.010) inch.

C-1 door 28.87 (±0.010) inch.

(c) Lock-wire both rod bearing ends of all stabilizer link rods, if required.

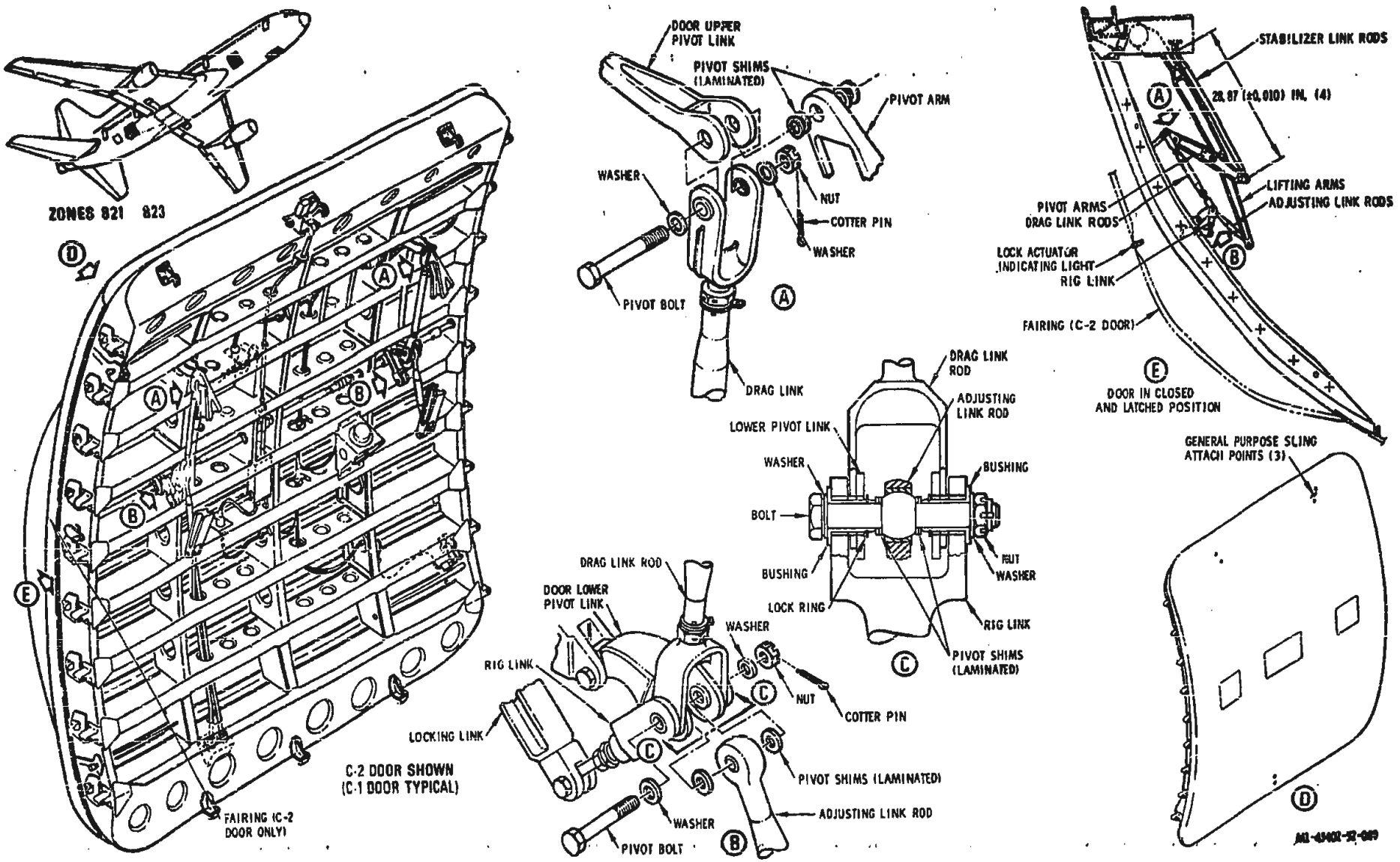
(d) Loosen outboard bolts on upper and lower roller guide fittings located on forward and aft sides of door surround structure.

(e) Check that applicable cargo door actuation system circuit breakers ACTUATOR and CONTROL are open and tagged.

(3) Lift door with external or internal sling until door guide rollers almost enter surround structure roller guides.

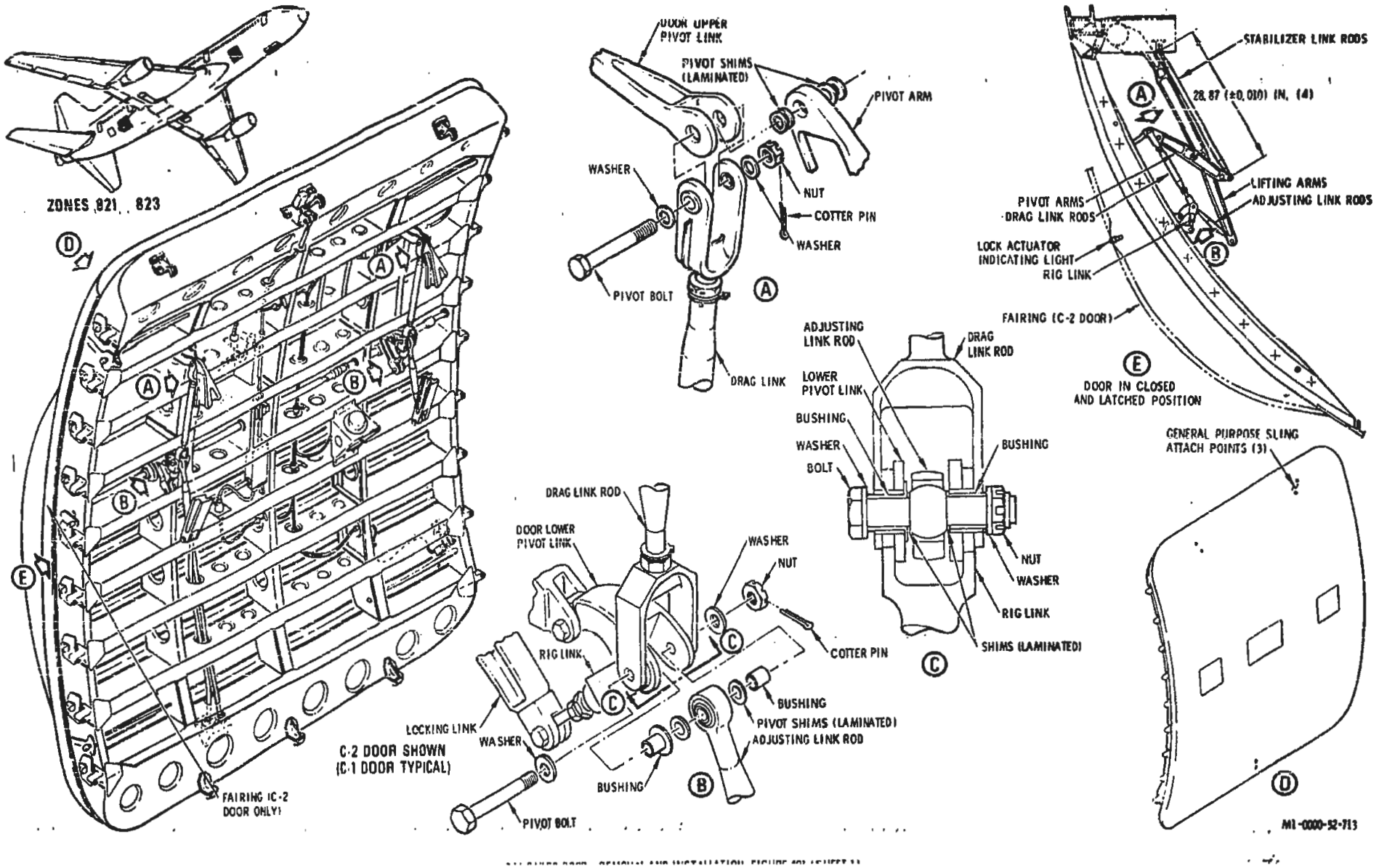
(4) Position upper and lower rollers, for free door roller entry into four corner roller guide fittings. Continue lifting door until upper and lower rollers bear against inboard surface of roller guides.

(5) Move door down over pressure stops. While lowering door over pressure stops, protect pressure and ditch stops from dragging on or hanging up on door surround pressure stops.



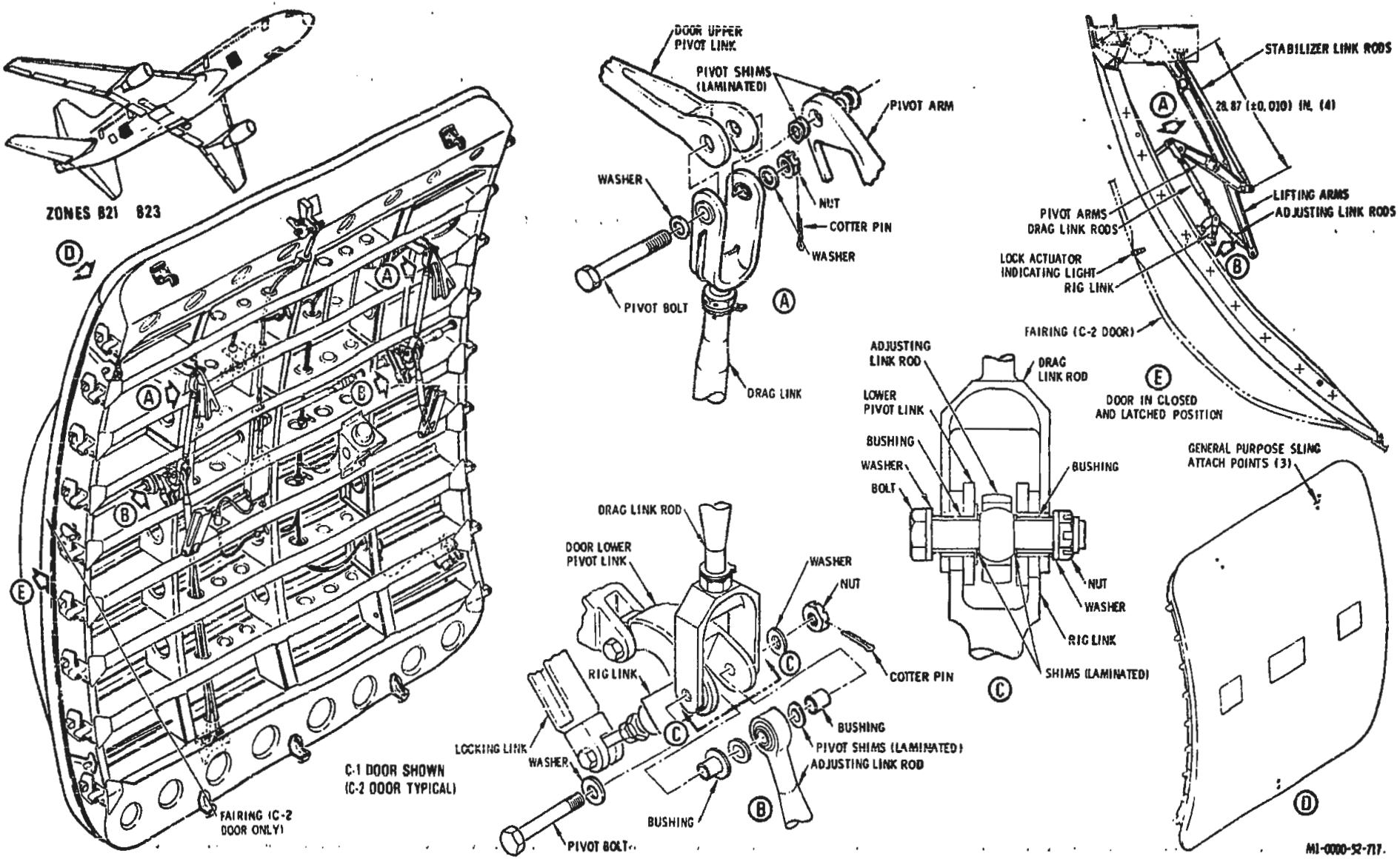
Cargo Door - Removal and Installation
Figure 401 (Sheet 1)

R EFFECTIVITY: 001-014
R
001B



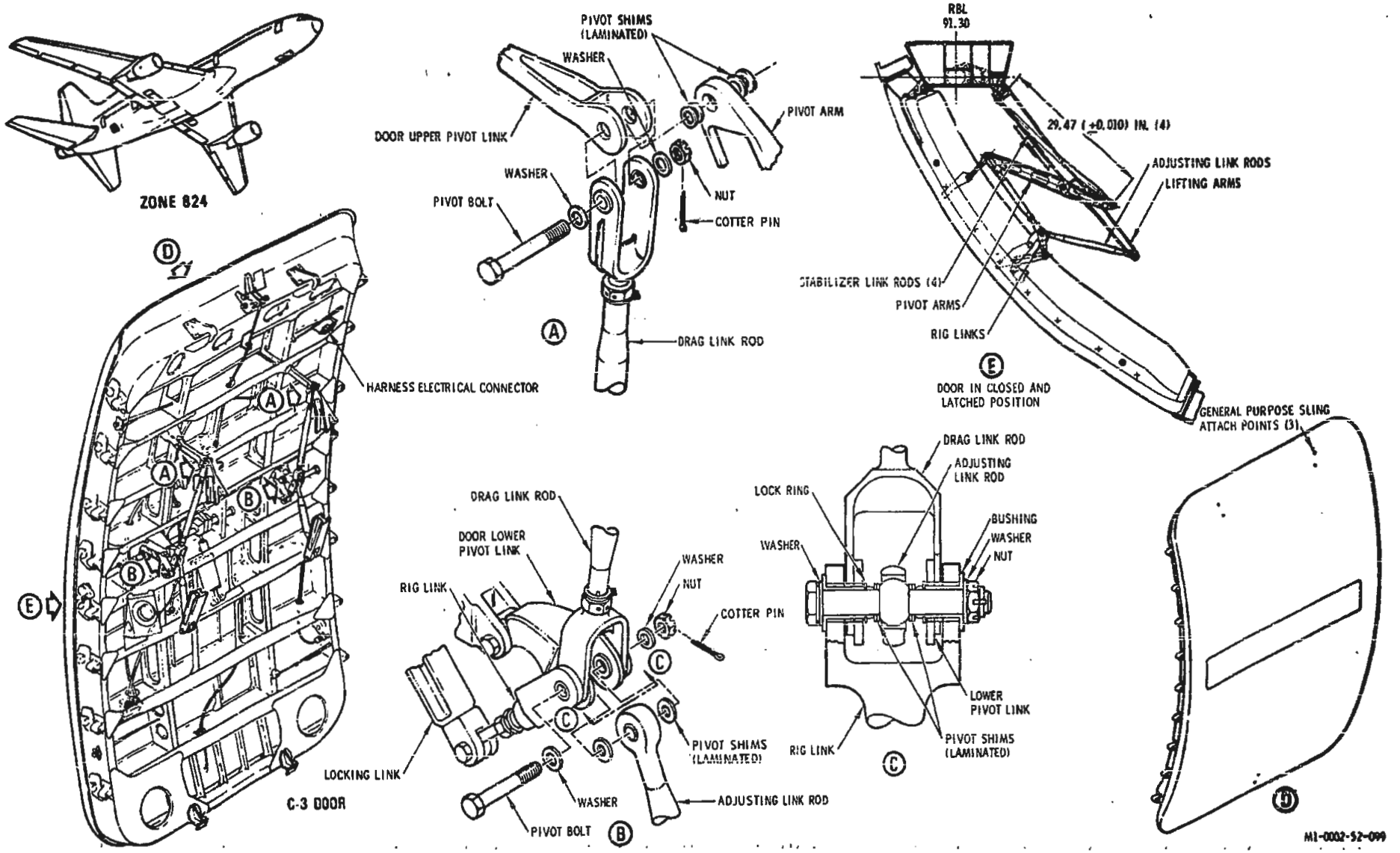
Cargo Door - Removal and Installation
Figure 401 (Sheet 1)

R EFFECTIVITY: 015-031
R
0018



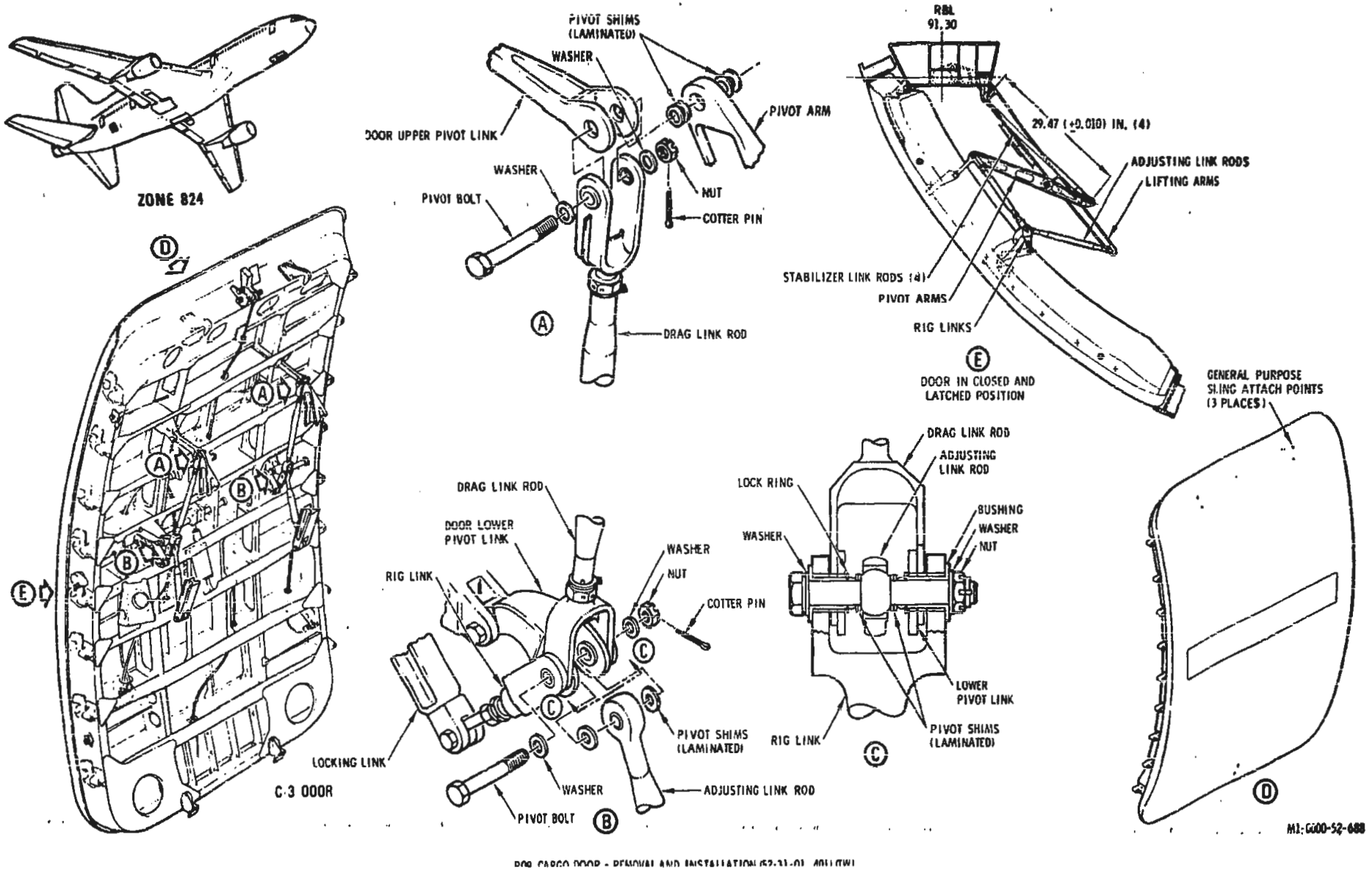
Cargo Door - Removal and Installation
Figure 401 (Sheet 1)

R EFFECTIVITY: 032-999
R
0018



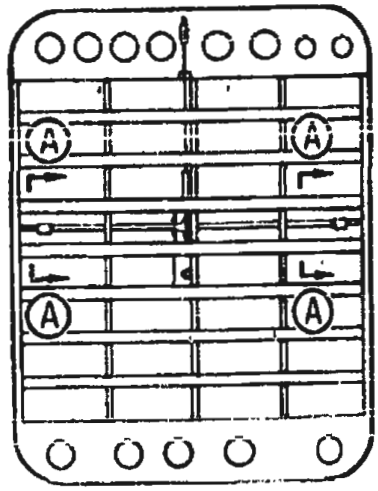
Cargo Door - Removal and Installation
Figure 401 (Sheet 2)

R EFFECTIVITY: 001-031
R
001B

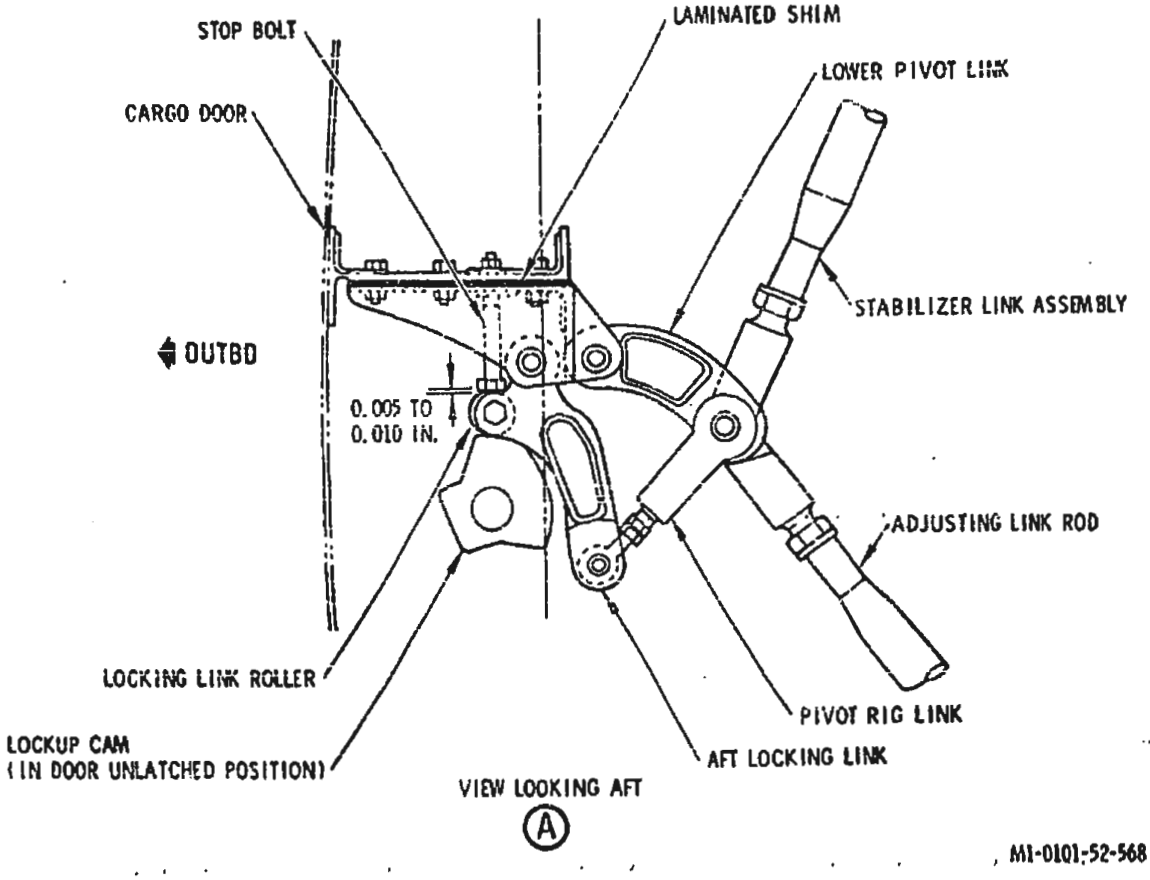


Cargo Door - Removal and Installation
Figure 401 (Sheet 2)

R EFFECTIVITY: 032-999
R
001B



TYPICAL CARGO DOOR



Shimming Aft Lower Link Bracket to Correct Door Cocking
Figure 402

CAUTION: AFTER POSITIONING DOOR ON PRESSURE STOPS, DO NOT REMOVE DOOR SUPPORT ATTACHMENTS UNTIL LIFTING CAM FITTINGS ARE INSTALLED.

(6) Check that door is centered, or positioned low over surround structure pressure stop pads. Loosen roller guide inboard bolts as required to allow door to be moved on pressure stops.

(7) Operate door safety stop to locked position.

NOTE: This will prevent the door from being moved off the pressure stops during door alignment.

(8) Adjust vertical (up-down) centering of door on pressure stop pads as follows:

(a) Move door as required to center door pressure stop adjustment bolts within ±0.090 inch on the fore and aft pressure stop pads at door beams No. 4 and 5.

NOTE: Beams No. 4 and No. 5 are directly above and below the torque tube at the center of the door.

(9) Center door in fore and aft direction as follows (Ref. Fig. 403):

(a) Using a wood pry-bar, carefully move door forward or aft as required to set a clearance of 0.12 (±0.06) inch between ditch stops and pressure stop fittings at forward and aft ends of door at top beam (No. 1) and bottom beam (No. 9).

NOTE: At the C-3 door the bottom beam is identified as No. 8. Move door carefully to avoid losing adjustment made in Step (8).

(b) The total fore and aft gap at each beam is restricted to 0.25 (±0.04) inch.

(c) Verify that door is still centered vertically [Ref. Step (8)].

(10) With door latch crank in latched position, install lifting cam fittings with latch crank rollers contacting closed end of each roller guide fitting. Be certain that serrations are not crossed, then tighten inboard bolts. Outboard bolts must be tightened when accessible.

(11) Disconnect hoist, or door support equipment and remove sling.

(12) Fair door to outside airplane contour (Ref. Fig. 404). Find the best compromise of flushness of door to surround structure tripler, between door beams No. 1 and No. 9 at C-2 door, and between beams 1 and 9 at C-1 door on forward and aft sides of the door, by use of upper and lower pressure stop adjustment bolts as follows:

(a) Fair upper end of door to contour by pulling door into contour with fore and aft pressure stop adjustment bolts on beam No. 1 (Ref. Fig. 404). Check for surround structure interference during adjustment.

(b) Fair lower end of door to contour with fore and aft pressure stop adjusting bolts on bottom beam (No. 8 beam, C-3 door; No. 9 beam on C-2, and C-1 door).

(c) On the C-2 door, check that door fairing forward edge is 0.06 to 0.18 inch inside contour of fairing trailing edge located forward of door fairing. The door fairing aft edge mismatch should be from 0.03 inch outside to 0.09 inch inside contour of adjacent fairing.

NOTE: If door fairing forward edge mismatch is not within tolerance, shim up trailing edge of the fairing located forward of door.

(13) Adjust fore and aft, upper and lower roller guides as follows:

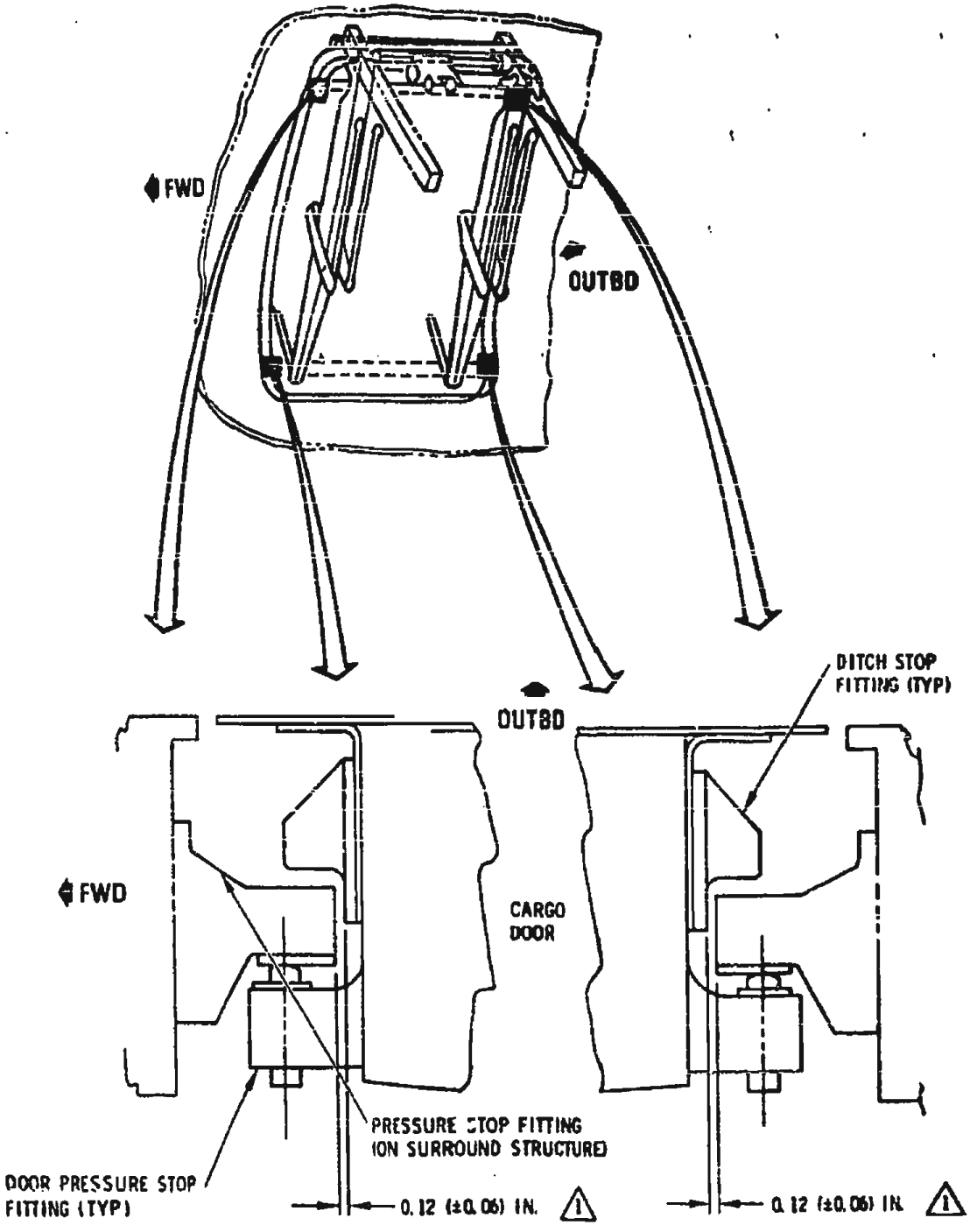
(a) Adjust roller guides by placing outboard surfaces of guide on roller and pulling guide inboard and up until firm contact is made with roller in roller guide detent. Torque all inboard bolts.

NOTE: All outboard bolts must be torqued when accessible.

(b) Back off pressure stop adjusting bolts used to bring door into contour [Ref. Step 4C(12)].

(14) Connect door opening mechanism to door as follows:

(a) Attach pivot arms to upper pivot link fittings and upper end of drag link rods with attaching bolts, washers, laminated washers, and nuts (Ref. Fig.

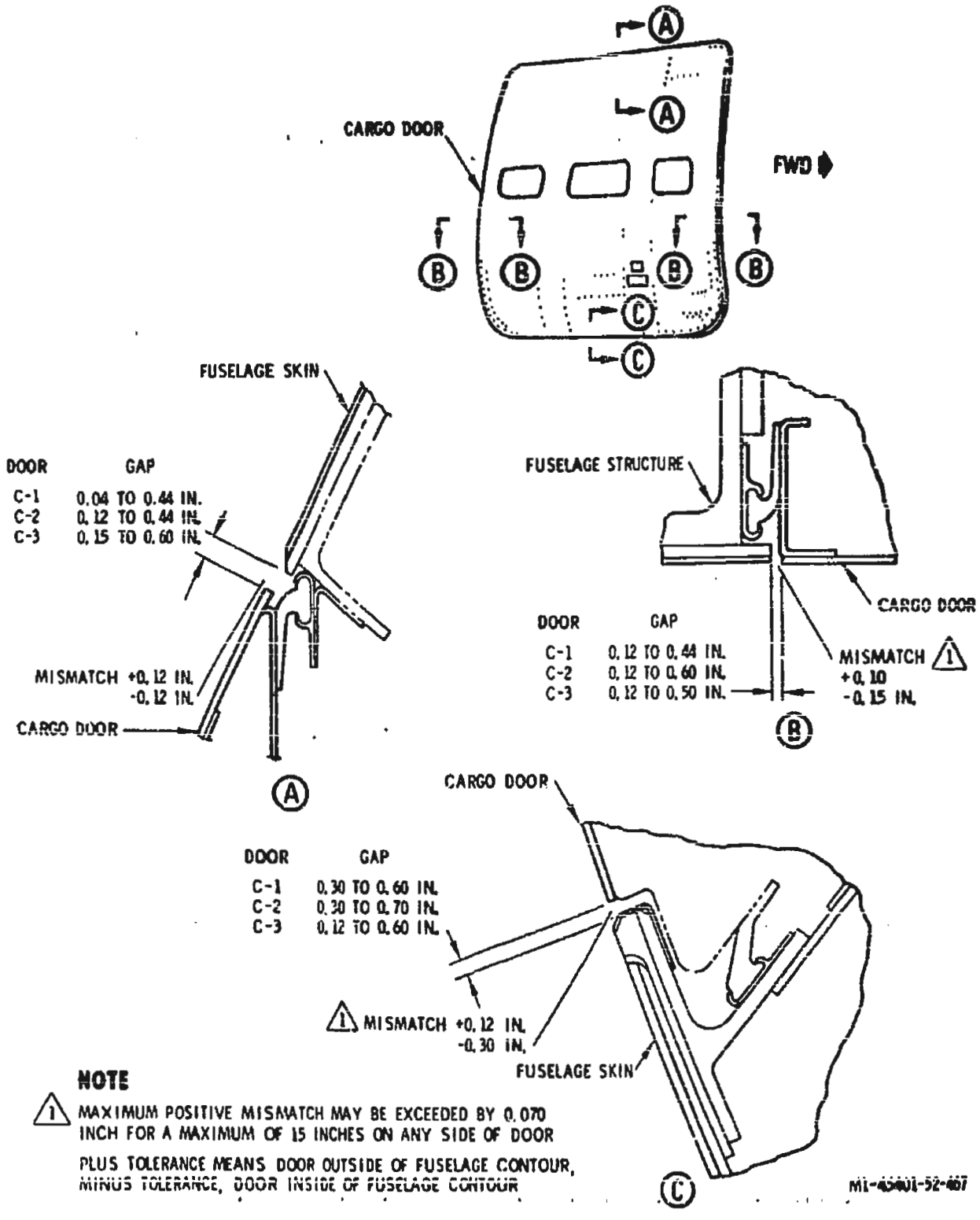


NOTE

1 TOTAL FORE AND AFT GAP MUST BE 0.25 (±0.04) INCH AT THE TOP AND BOTTOM DOOR BEAM FITTINGS.

M1-0100-52-499

Cargo Door Fore and Aft Alignment
Figure 403



Cargo Door Gap and Mismatch Dimensions
Figure 404

401). Delaminate washers as required to fill fore and aft gap between pivot link bearings and pivot arm bearings. Provide for clearance gap of 0.001 to 0.005 inch.

NOTE: Allow linkage to be shimmed without fore or aft pre-load. Washers may be cemented together for assembly.

(b) Adjust adjusting link rod length to mate with lifting arm lower end bearings. Bolt should slide in freely. Install bolts with washers and nuts.

(c) Install cotter pins at all pivot bolt nuts.

WARNING: VERIFY THAT LIFT ACTUATOR TORQUE SHAFTS ARE INSTALLED BEFORE ATTEMPTING TO OPEN CARGO DOOR.

(15) Check lift actuator for proper adjustment of door closed reference position (Ref. Para. 4D, 52-34-01, Removal and Installation).

(16) If required, engage lift actuator torque shafts with forward and aft gearboxes, install collars and lock-wire (Ref. Para. 4E, 52-34-01, Removal and Installation).

(17) Electrically unlatch and open door to full open position. While door is opening check that door moves freely, and that door and door opening mechanism does not strike or hang up on door surround structure.

(18) Check for interference at top of door between fuselage skin tripler and door skin. If interference is evident move upper roller guides outboard until interference is eliminated.

(19) At the C-3 door only, check for deflection of door internal mechanism as follows:

(a) Electrically or manually drive door toward closed position until door is hanging approximately vertical.

(b) Pull down on lower aft corner of door with a force of approximately 50 pounds; check for door cocking.

NOTE: Door cocking is caused by excessive deflection of internal mechanism which allows locking link roller to ride over end of lockup cam.

(c) If door does not cock, proceed to Step (20).

(d) If door cocks as described, correct condition by using procedure Paragraph D.

(20) Check door for proper entry of door rollers into upper and lower, forward and aft roller guide fittings (Ref. 52-30-04). Adjust if necessary.

(21) Check door for proper latching operation (Ref. 52-30-07).

(22) At forward and aft lifting cams verify that attachment bolts are installed, and torque all bolts.

(23) Verify adjustment of door closed limit switch (Ref. 52-31-16).

(24) Install door hooks and adjust pressure stop bolts and hooks (Ref. 52-30-13).

(25) Verify safety stop operation to locked position. Correct as required (Ref. 52-30-19).

(26) Verify operation of proximity sensor/target to locked and unlocked positions (Ref. 52-30-22).

(27) Adjust door to full open position (Ref. 52-30-25).

(28) Electrically close door and check adjustment of lift actuator uplock push-pull cable (Ref. 52-34-13).

(29) Verify operation of cargo door unlock switch (Ref. 52-30-28). Adjust if necessary.

(30) Perform Cargo Door Completion Check (Ref. 52-30-31).

D. Correction of C-3 Door Internal Mechanism Deflection

Door cocking is caused by excessive deflection of the mechanism which allows the locking link roller to ride over the end of the lock-up cam.

(1) Cocking (deflection) of C-3 door can be diagnosed as follows:

(a) Operate door toward closed position until door hangs approximately vertical.

(b) Pull down on lower aft corner of door with a force of approximately 50 pounds. If door cocks,

reposition door by pushing aft and slightly up on lower forward corner of door.

(2) To correct door cocking proceed as follows:

(a) Electrically or manually operate door to latched and locked position.

(b) Loosen aft adjusting link rod by rotating rod until it is unloaded.

(c) Free adjusting link rod by removing bolt from inboard end of link rod.

(d) Remove aft lower link bracket attaching nuts, bolts and washers (Ref. Fig 402).

(e) Remove nut and washer from upper end of stop bolt but do not disturb stop bolt adjustment.

(f) Remove aft lower link bracket.

(g) Re-install lower aft support bracket with additional 1/16-inch thick laminated aluminum shim stock (P/N 1560714-105).

(h) Install washers and nut on upper end of stop bolt. With door unlatched, check for 0.005 to 0.010-in. clearance between head of stop bolt and locking link roller.

(i) Readjust door linkage so that door rollers enter their respective roller guides and move to door closed position (Ref. 52-30-04).

(j) Repeat Steps (a) through (i) as required, until lockup cam roller will not ride over end of cam when 50-pound force is applied.

LINEAR DOOR LOCK ACTUATOR - REMOVAL AND INSTALLATION

1. General

The door lock actuator (Ref. Fig. 401) is located on the inboard side of the cargo door.

NOTE: To facilitate removal of the cargo door exterior access plates, attaching panhead screws NAS 5203U and NAS 5204U can be replaced by hex-head bolts NAS 6403U and NAS 6404U in lengths equal to replaced screws. C-2 cargo door fairing fasteners NAS 4603U and finishing washers LS 13013A can be replaced by NAS 6403U bolts with AN 960C washers. Bolt length must be equal to replaced fasteners.

2. Equipment and Materials

Rigpin, 0.312-inch diameter steel rod

C Lubrication Oil, general purpose, MIL-L-7870

Grease, MIL-G-23827 or equivalent

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

3. Referenced Procedures

	52-30-22	Cargo Door Proximity Sensor - Adjustment and Test
R R	52-31-08	Cargo Door Latching Actuator - Removal and Installation
	52-31-10	Safety Stop Push-Pull Cable Control - Adjustment and Test
	52-34-00	Cargo Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

R (1) Gain access to inboard side of cargo door electrically or manually.

NOTE: To facilitate removal and installation of lock actuator, cargo door should be partly open,

hanging in vertical position, and with door actuated manually or electrically to latched position.

(2) To electrically latch the door latching actuator, perform following:

(a) At lower aft corner of door, activate and hold door closed limit switch.

(b) Operate door actuation switch to CLOSE position and hold until latch actuator completes its movement to latched position.

WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON THE DOOR.

(3) Tag electrical and manual door controls.

(4) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(5) Peel up lower edge of upper insulation blanket for access to actuator.

(6) Disconnect actuator electrical plug from receptacle (Ref. Fig. 401).

CAUTION: DO NOT ATTEMPT TO DETACH AND REMOVE LOCK ACTUATOR WITHOUT FIRST FREEING LOWER SAFETY STOP PUSHROD END BEARING FROM THE ACTUATION CRANK ASSEMBLY. REMOVING OF LOCK ACTUATOR WITH PUSHROD STILL ATTACHED MAY RESULT IN SUDDEN SNAPPING OF SAFETY STOP RETURN SPRINGS CAUSING POSSIBLE DAMAGE TO CRANK OR UPPER LOCK ACTUATOR SUPPORT BRACKET.

(7) On aircraft with safety stop pushrod, remove attaching bolt at lower end bearing of safety stop pushrod and free pushrod from actuation crank assembly. Retain bolt, nut, and washers for reinstallation (Ref. Fig. 401).

(8) Remove attaching hardware at upper and lower ends of lock actuator.

(9) Remove lock actuator.

B. Installation

(1) Verify that electrical and manual door controls are tagged, and that circuit breakers opened in Step 4A(4) are open and tagged.

WARNING: ON AIRCRAFT WITH PUSHROD CONTROLLED SAFETY STOP, DO NOT ATTEMPT TO MOVE SAFETY STOP WITH THE LOCK ACTUATOR REMOVED OR WHILE PUSHROD IS DETACHED FROM ACTUATION CRANK ASSEMBLY. SAFETY STOP IS SPRING-LOADED AND MAY CAUSE INJURY.

R (2) On aircraft with safety stop push-pull cable, insert rig pin through rig pin hole in latch support bracket and lever locking latch. Check for correct clearance between end of lever locking latch and actuation crank assembly (Ref. Fig. 401).

R (2) On aircraft with safety stop pushrod, perform following:

R (a) Verify lower end bearing of pushrod is detached from lock actuation crank assembly.

R (b) Insert rig pin through rig pin hole in latch support bracket and lever locking latch. Check for correct clearance between end of lever locking latch and actuation crank assembly (Ref. Fig. 401).

R (3) To prepare lock actuator for installation, manually actuate to fully retracted position.

R (4) Remove lock-wire, loosen locknut and adjust actuator rod end bearing until actuator mount bolts can be installed at both ends.

C NOTE: Do not rotate or move the actuator knob to aid alignment of the actuator mount bolt.

CAUTION: DO NOT APPLY EXCESSIVE TORQUE WHEN TIGHTENING END BEARING LOCKNUT.

R (5) After actuator mounting length has been determined, remove actuator and lock end bearing with locknut; tighten locknut fingertight. Lock-wire nut to locking tab.

R (6) On aircraft with safety stop push-pull cable, before installing actuator, check for free movement of safety stop mechanism and safety stop push-pull cable flexible control, as follows:

(a) Pull down on lever locking latch near flexible control cable attach point until safety stop is in unlocked position.

(b) Release lever locking latch and verify safety stop returns freely to locked position.

NOTE: Safety stop is spring-loaded to the locked position.

(c) If safety stop does not return freely to locked position, lubricate safety stop pivot bolt with general-purpose oil.

(d) After application of oil, recheck for free movement of safety stop mechanism [Ref. Steps 4B(6)(a) and 4B(6)(b)].

CR CR CR CR (e) If movement of mechanism is still not free, check condition of cable lower rod end bearing to assure it is not frozen. If bearing is damaged, change the cable assembly.

NOTE: Safety stop action must be free; if it is not, correct condition before continuing.

(6) On aircraft with safety stop pushrod control, check for free movement of safety stop as follows:

WARNING: THE SAFETY STOP IS SPRING LOADED TO BOTH LOCK AND UNLOCK POSITIONS. USE CAUTION WHEN MANUALLY POSITIONING SAFETY STOP PUSH ROD.

(a) Grasp push rod and operate stop through full lock to unlock positions. Verify that safety stop operates freely.

(b) Operate push rod to position safety stop towards lock position. Verify that the springs move safety stop to full locked position.

(c) Operate push rod to position safety stop towards unlock position. Verify that when safety stop is almost to the unlock position, springs will snap safety stop to full unlock position.

(d) If safety stop does not move freely through its range of travel, lubricate all pivot components with light general purpose oil. Recheck mechanism for free movement.

NOTE: Safety stop action must be free; if it is not, correct condition before continuing.

(7) Lubricate actuator attaching bolts with grease (MIL-G-23827 or equivalent) and install actuator with attaching bolts, washers, and nuts. Tighten nuts until snug.

(8) Connect actuator electrical plug to receptacle.

(9) Lockwire plug to receptacle.

(10) On aircraft with pushrod controlled safety stop, reattach lower end bearing of safety stop pushrod to actuation crank assembly with bolt, nut, and washer removed in Step 4A(7) above. Tighten nut until snug.

C C C (11) Verify clearence between safety stop bellcrank and safety stop support bracket/stop bolt is 0.010 +/- 0.005 inch (Ref. 52-30-19, Fig. 502).

(12) If adjustment is correct, remove rigpin.

(13) Operate lock actuator manually to unlocked position by turning manual control knob 12 turns clockwise or until clutch slips.

(14) Remove tags and close circuit breakers opened in Step 4A(4).

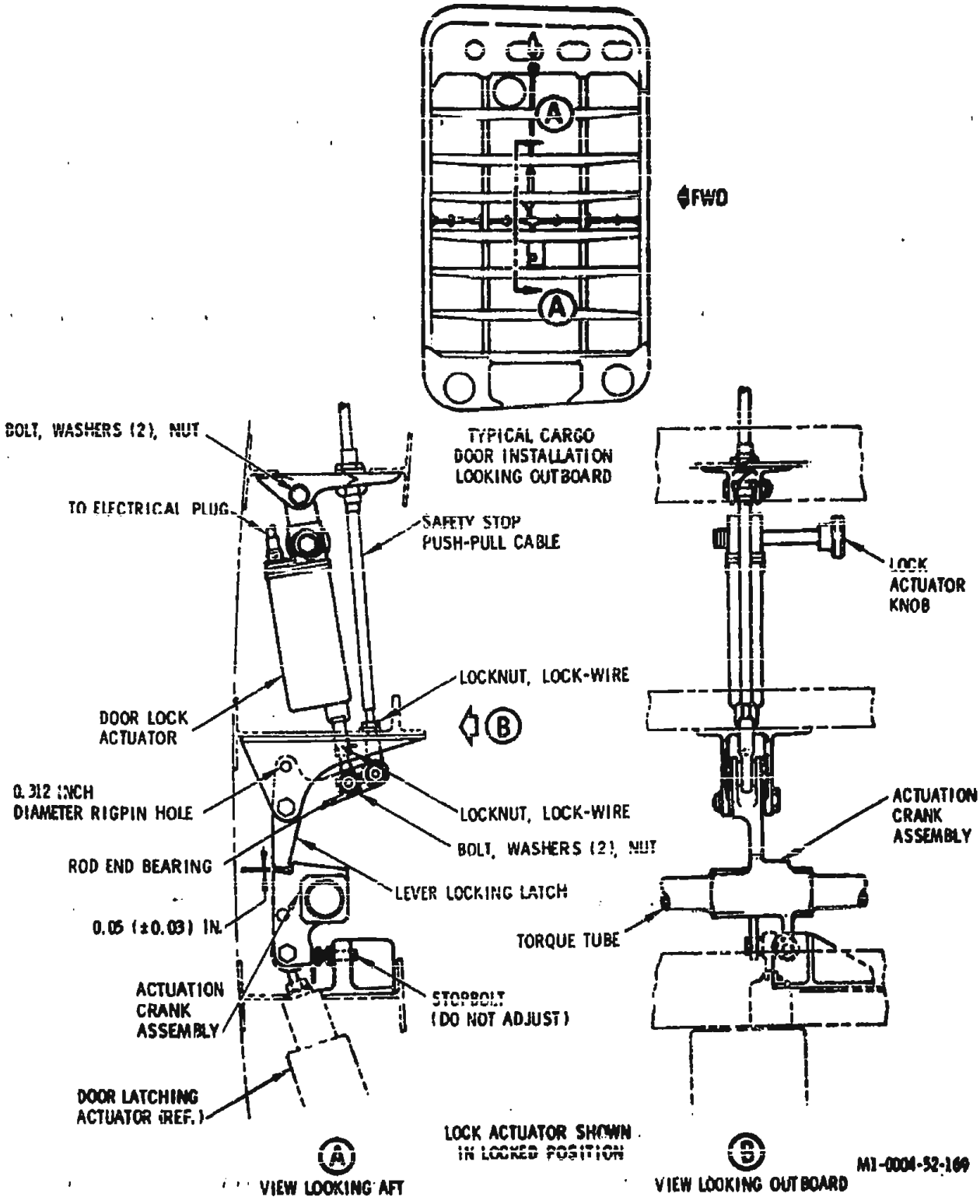
C C (15) Check adjustment of safety stop/proximity sensor (Ref. 52-30-19, Adjustment and Test, Para. 4.B.).

C (16) Remove tags from electrical and manual door controls.

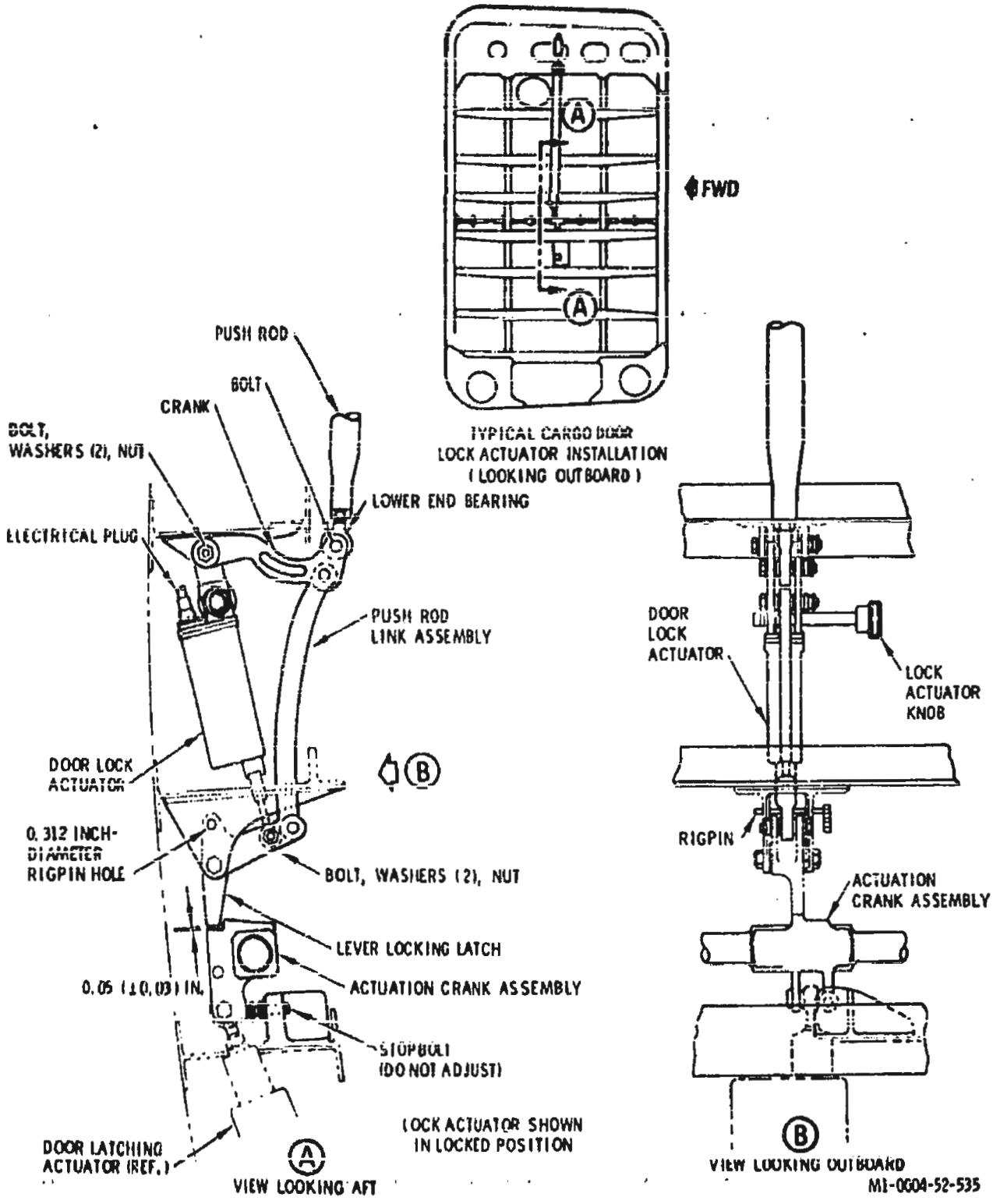
C (17) Fasten insulation blanket.

CR C (18) Operate door electrically to the closed, latched and locked position.

C C C (19) Perform operational test - - Electrical mode from outside aircraft (Ref. 52-34-00, Adjustment/Test, Para. 4.B.).



Door Lock Actuator - Removal and Installation
Figure 401



Door Lock Actuator - Removal and Installation
Figure 401

R EFFECTIVITY: 002, 014, 032-999
R
001B

CARGO DOOR SEAL - REMOVAL AND INSTALLATION

1. General

On aircraft 001-031,
a one piece door seal is installed in a seal retainer that is normally mounted on the cargo door surround structure. However, service experience has shown that ice and debris can collect between the door lower seal and the surround structure. This condition can prevent the door from seating in the full down position. Consequently, the door seal has been split into two parts with the lower part of the door seal being moved from the door surround structure to the door.

On aircraft 032-999,
a two piece door seal is used to seal the cargo door against pressurization leaks. The upper seal is located on the door surround structure while the lower seal is located on the door itself.

2. Equipment and Materials

Talcum powder

Pry bar

NOTE: The tool should have a tapered wedge-shaped end with blunt edges and must be made of wood or plastic. Do not use any metal tools.

R Solvent, 1,1,1, Trichloroethane, Technical Inhibited (Methyl Chloroform), Dow Chemical Co. VG, or equivalent

Sealing Compound, PR1422B-2 (LCM40-2180, Type I, Class B), or equivalent

Silicone Adhesive, RTV157 (LCM30-2085, Type I), or equivalent

3. Referenced Procedure

52-34-00 Door Actuation System - Maintenance Practices

4. Removal/Installation

A. Preparation

(1) Gain access to door seal.

(2) If door is installed in aircraft, operate to fully open position (Ref. 52-34-00).

(3) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

B. On aircraft 001-031,
Removal of one piece cargo door seal

CR (1) Remove nuts, washers and screws which make up the seal keeper, from door seal retainer (Ref. Fig. 403).

(2) Insert pry bar between outer edge of door seal and seal retainer (Ref. Fig. 401).

NOTE: The lower centerline area is preferred for starting seal removal. Getting the first part of the seal removed from the seal retainer is usually the most difficult. Once the seal is started, seal removal is easy. Do not use any metal tools to start seal removal as the seal retainer may be damaged.

(3) Pull outer edge of seal clear of retainer and remove from door opening.

B. On aircraft 032-999,
Removal of two piece cargo door seal

CR (1) If removing upper seal, remove nuts, washers and
CR screws, which make up seal keepers, from door seal
CR retainer (Ref. Fig. 403).

(2) Remove two screws that clamp the end of the seal between the striker and splice plate at both ends of upper or lower seal.

NOTE: The lower centerline (for lower seal) or upper centerline (for upper seal), is preferred for starting seal replacement. Getting the first part of the seal removed from the retainer is usually the most difficult. Once the seal is started, seal removal is easy. Do not use any metal tools to start seal removal as the seal retainer may be damaged.

(3) Pull outer edge of seal clear of retainer and remove the upper or lower (or both upper and lower) seals.

C. On aircraft 001-031,
Installation of one piece cargo door seal

(1) Verify that circuit breakers opened in Step 4A(3) are open and tagged.

(2) Check that door seal and seal retainer are clean and free of grease.

(3) Apply talcum powder to seal and seal retainer.

(4) Place seal over door with words TOP and FWD facing outboard and oriented correctly with respect to aircraft centerline.

(5) With seal TOP centerline positioned at top centerline of door opening, install seal into seal retainer at top center in two steps (Ref. Fig. 401).

(6) Install seal at upper corners of doorway with corner segment tangent marks aligned with corresponding marks on seal retainer.

(7) Install seal into seal retainer at lower corners of doorway with tangent marks aligned.

(8) Install seal into seal retainer at center points of sides and bottom of doorway.

(9) Install seal into seal retainer at approximately 12-inch intervals around doorway.

(10) Complete installation of seal into seal retainer around doorway.

CR (11) Install screws, washers and nuts, which make up seal keeper, on door seal retainer (Ref. Fig. 403).

(12) Seal pressure side of door seal and retainer as follows:

WARNING: USE CLEANING MATERIALS IN WELL-VENTILATED AREA. DO NOT INHALE VAPORS OR ALLOW CLEANING MATERIALS TO COME IN CONTACT WITH SKIN. KEEP CLEANING MATERIALS AWAY FROM OPEN FLAMES.

(a) Clean door seal and retainer interface surfaces with clean cloth dampened with solvent (1,1,1, Trichloroethane). Wipe dry with clean dry cloth.

CAUTION: DO NOT ALLOW LIQUID SOLVENT TO REMAIN ON SEAL.

(b) Apply bead of RTV157 silicone adhesive, approximately 1/8-inch wide, along interface of

seal retainer and seal foot on pressure side of seal (completely around door seal). Smooth fillet and allow to cure two hours before pressurization(Ref. Fig. 401, View C).

CR (c) Use PR1422B-2 sealing compound to completely cover the plate nuts and protruding screws on the upper inboard side of door opening.

(13) Remove tags and close circuit breakers opened in Step 4A(3).

C. On aircraft 032-999,
Installation of two piece cargo door seal

(1) Verify that circuit breakers opened in Step 4A(3) are opened and tagged.

(2) Check that door seal, seal retainer, splice plate, and portion of striker that is clamped to seal are clean and free of grease or sealant.

(3) Apply talcum powder to seal and seal retainer.

(4) With seal centerline positioned at centerline of seal retainer of the surround structure (for top seal), or positioned at centerline of seal retainer of the door (for bottom seal), install seal into seal retainer in two steps (Ref. Fig. 402, View D).

(5) Install seal into seal retainer at corners with tangent marks aligned.

(6) Install seal into seal retainer at approximately 12-inch intervals around doorway.

(7) Complete installation of seal into seal retainer around doorway.

CR (8) At upper seal, install screws, washers and nuts, which make up seal keepers on door seal retainer (Ref. Fig. 403).

(9) Apply sealing compound to seal, seal retainer, and splice plate as follows:

WARNING: USE CLEANING MATERIALS IN WELL VENTILATED AREA. DO NOT INHALE VAPORS OR ALLOW CLEANING MATERIALS TO COME IN CONTACT WITH SKIN. KEEP CLEANING MATERIALS AWAY FROM OPEN FLAMES.

(a) Clean door seal, retainer, and splice plate interface surfaces with clean cloth dampened with solvent (1,1,1, Trichloroethane). Wipe dry with clean dry cloth.

CAUTION: DO NOT ALLOW LIQUID SOLVENT TO REMAIN ON SEAL.

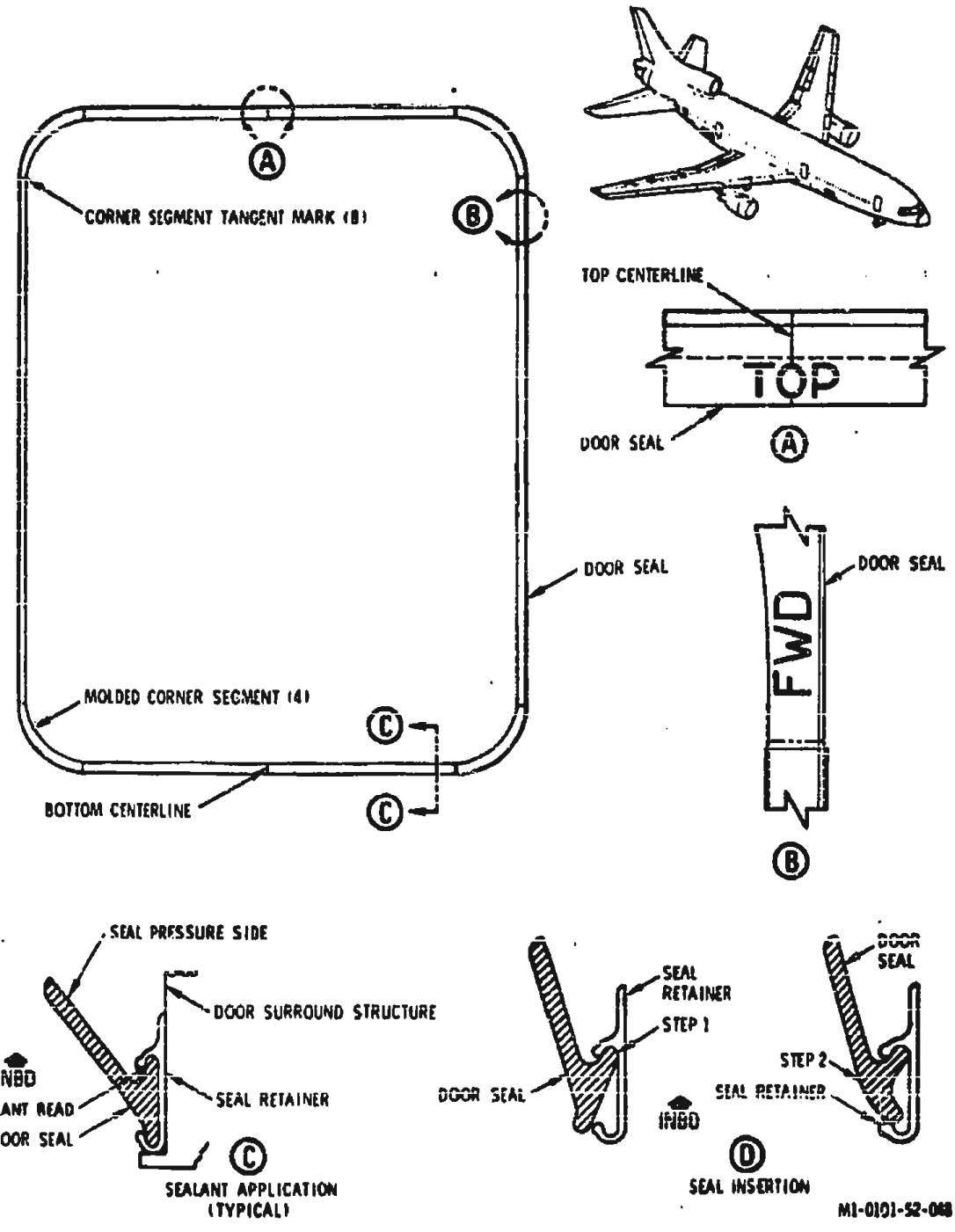
(b) Apply bead of RTV157 silicone adhesive, approximately 1/8-inch wide, along interface of seal and seal retainer on pressure side of seal, completely around seal. Smooth fillet and allow to cure two hours before pressurization (Ref. Fig. 402, View C).

(c) Fill gap between seal and striker with RTV157 silicone adhesive and smooth out between surfaces. Allow to cure two hours before pressurization (Ref. Fig. 402, View F).

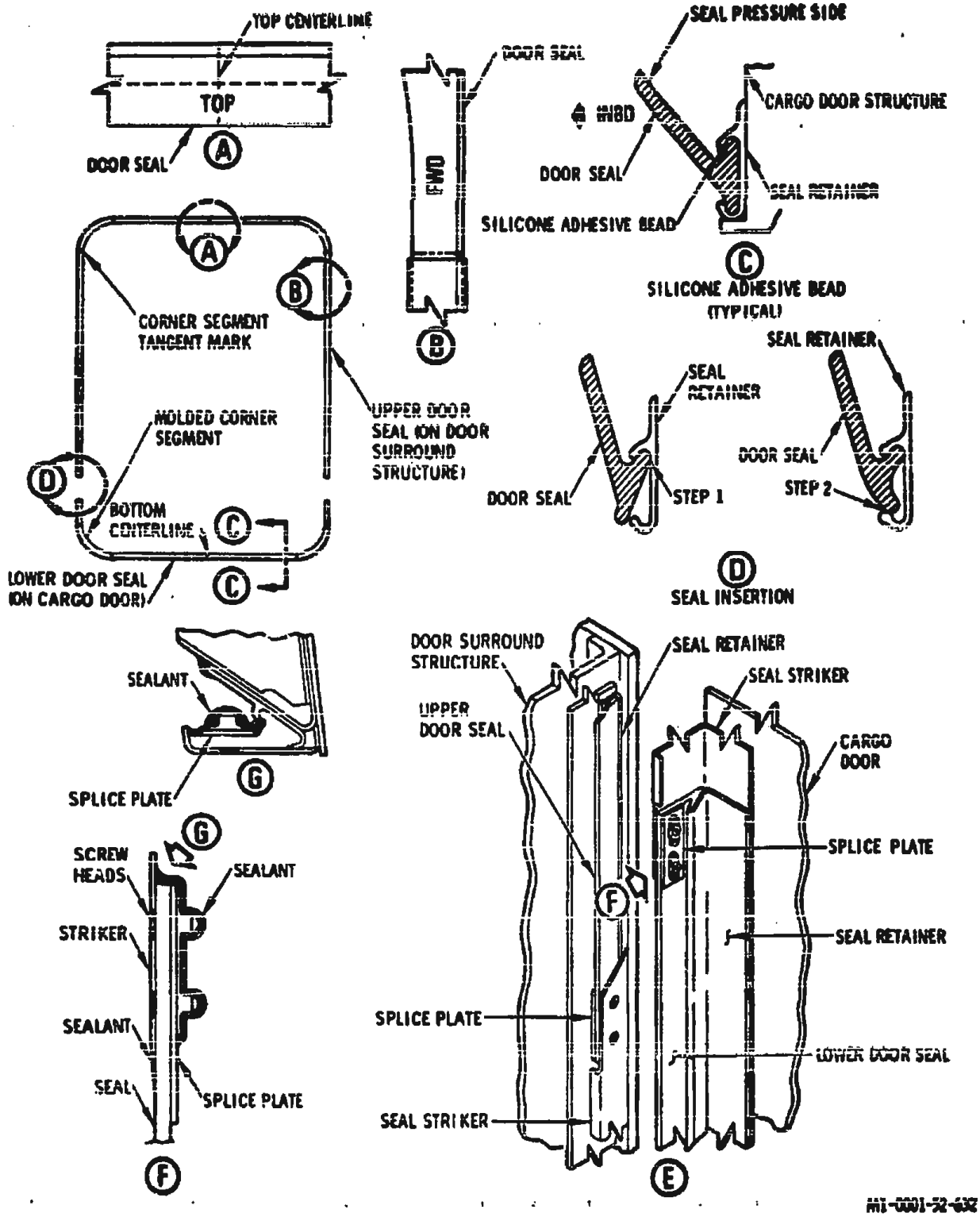
(d) Fill screw heads and depression with PR1422B-2 sealing compound and flush with mounting surface.

(e) Use PR1422B-2 sealing compound to completely cover the plate nuts and protruding screws (Ref. Fig. 402, View F and G).

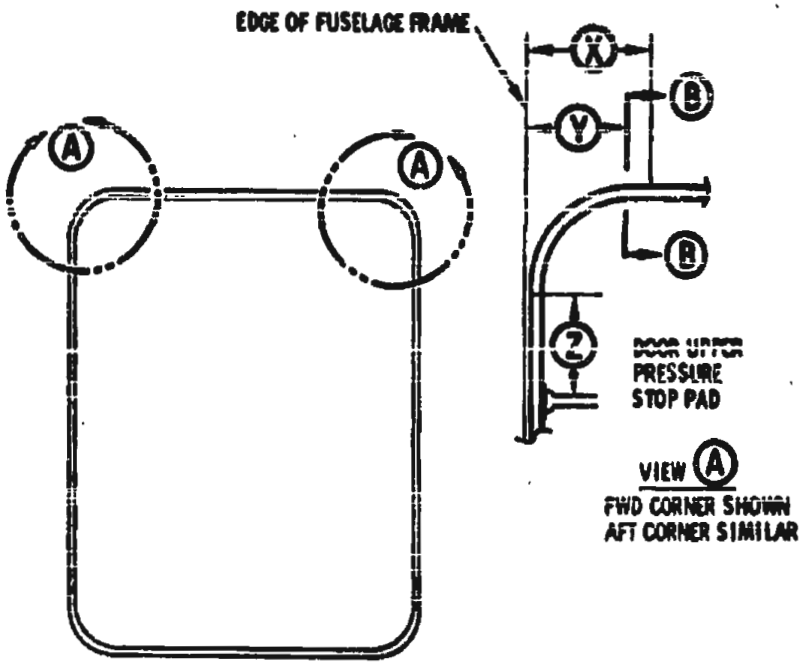
(10) Remove tags and close circuit breakers opened in Step 4A(3).



One-Piece Cargo Door Seal - Removal and Installation
Figure 401



R Two-Piece Cargo Door Seal - Removal and Installation
R Figure 402

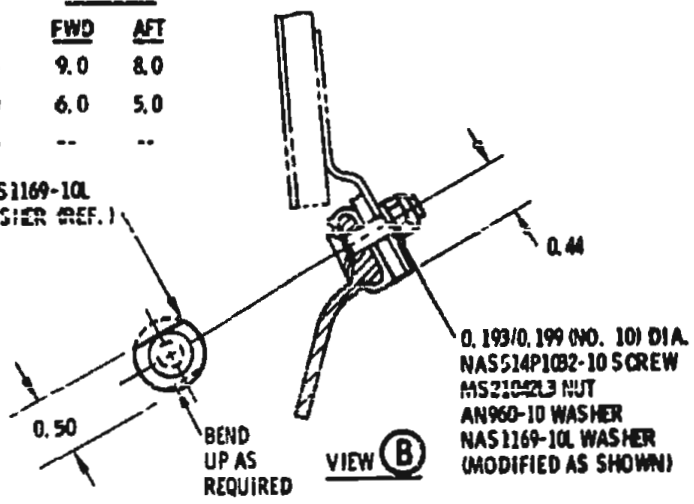


TYPICAL CARGO DOOR RETAINER
VIEW LOOKING OUTBOARD

TABLE I

DIMENSIONS (IN INCHES) ARE APPROXIMATE, HOLE TO BE CENTERED BETWEEN NEAREST RETAINER RIVETS.

	C-1 DOOR		C-2 DOOR		C-3 DOOR	
	FWD	AFT	FWD	AFT	FWD	AFT
X	20	21	21	19.5	9.0	8.0
Y	9.5	9.5	9.0	9.0	6.0	5.0
Z	6.5	6.5	6.0	5.5	--	--



M1-0000-32-0??

C Cargo Door Seal Keepers - Removal and Installation
C Figure 403

R EFFECTIVITY: ALL
R
001B

CARGO DOOR SEAL - APPROVED REPAIRS

1. General

The cargo door seals and seal retainers are subject to possible damage during cargo container loading operations. Damage consists of cut or torn seals, and/or tearing, cracking or deformation of seal retainers and corner brackets. Generally, damaged seal retainers and corner brackets should be replaced, since repair is not practical. Replacement of a damaged seal with a new seal is preferable, however, seals may be repaired as described below. The repairs described are common for C-1 and C-2 door seals, but may also be used on the C-3 door seal. When seals on either the upper or lower edge of the C-2 door fairing are found missing, torn, or loose, the fairing should be removed from the door to permit close visual inspection for cracks in the door skin and fairing supports. An interim repair should be made on any damaged seal and if part of a seal is missing, the opening between the door and edge of fairing should be covered by aerodynamic tape. Inform MCIMD of details so follow-up action can be established for replacement or permanent repair to seal.

2. Equipment and Materials

Knife, or scissors

Staple gun, SALCO P694 or RAPID 31B/73

Staples, 1/2 V2A (Western Duo-Fast, Los Angeles, CA 90023)

Spatula, or putty knife

Solvent, Methyl Ethyl Ketone (MEK), Federal Specification TT-M-261, or 1,1,1 Trichloroethane, Fed Spec. O-T-620 Technical Inhibited (Methyl Chloroform), Dow Chemical Co., or Chlorothene VG, or equivalent

Wiping cloths (cotton), clean-dry, oil-free

Silicone Adhesive-Sealant, General Electric Co., RTV-157

Fabric, Dacron Weave, Pattern D-400, Mohawk Fabrics, 96 Gay Park Avenue, Amsterdam, N.Y., 12010, or equivalent

Rubber Molded Seal, LS13548 X 8 inches, or alternate material, 0.125 in. thick silicon rubber, 50 or 60 shore hardness (LAC C-23-1195)

R Seal Corner (AFT), PN 1522480-119

R Seal Corner (FWD), PN 1522480-120

R Tape, G-557, Connecticut Hard Rubber Co.

R Tape, Glass Cloth, Thermosetting, Silicone Adhesive per
R MIL-I-19166C, 3-inch width tape manufactured by 3M No. 361,
R Permacel 212, or Mystik 7000 and 7001

R 3. Referenced Procedures

R 52-31-05 Door Seal - Removal and Installation

R 4. Approved Repairs

R A. Minor Damage

R Cuts or tears which do not extend into the seal foot area,
R or cuts or tears less than two-inches long, or not over
R 0.125 inch in width, can be repaired. Repair may be either
R the temporary or permanent type, depending on conditions.
R Temporary type repair should be reworked to permanent type
R repair, at the earliest convenient time.

R (1) Temporary Repair

R (a) Thoroughly clean torn, cut, or abraded area, and
R area around seal periphery, extending at least one
R inch beyond each end of seal repair area (Ref.
R Fig. 801). Use clean cloth dampened with solvent.
R Wipe dry with clean dry cloth before solvent
R evaporates.

R (b) Butt damaged ends of seal together making sure
R that original seal edge alignment and length are
R maintained. Then using two-inch wide strip of
R G-557 tape, cut to length (Ref. Fig. 801), center
R tape over damage area and apply carefully to
R prevent wrinkles. Press tape firmly on seal,
R making sure that all portions of tape adhere
R firmly to seal.

R (2) Permanent Repair

R (a) Thoroughly clean torn, cut, or abraded area, and
R area around seal periphery, extending at least one
R inch beyond each end of seal repair area (Ref.
R Fig. 801). Use clean cloth dampened with solvent.

Wipe dry with clean dry cloth before solvent evaporates.

CAUTION: DO NOT ALLOW SOLVENT TO SOAK INTO SEAL.

(b) Cut to size, a piece of Dacron fabric, a minimum of three inches long, and extending a minimum of one inch on each side of seal damage area. Using solvent, clean side of fabric to be bonded to seal as described in Step 4A(2)(a).

(c) Apply a continuous coat of adhesive (RTV-157), approximately 0.010 inch thick, on seal over entire area to be covered with Dacron reinforcement fabric. Also brush adhesive into cut or torn edges of seal damage area. R

(d) Butt damaged seal edges together, making sure original alignment and length are maintained.

(e) Firmly press fabric on adhesive surface, and carefully eliminate wrinkles. The adhesive which extrudes at edge of fabric must be smoothly faired along edge of fabric to contour with seal. Allow sealant to cure two hours before pressurization. C C

NOTE: Silicone adhesives cure most rapidly in a humid atmosphere and moderate temperature conditions. Heat lamps are not recommended as excessive heat may cause gelling of the adhesive (a condition in which cure will not occur).

B. Major Damage

A cut or tear extending into or through the seal foot area, and not involving loss of seal material, requires a fabric reinforcement splice extending completely around the seal.

Damage involving multiple cuts or tears, or damage resulting in loss of seal material, requires removal of damaged seal, and replacement with a portion of good seal from the equivalent area of another seal.

NOTE: Undamaged sections of a previously damaged and replaced seal can be used to repair other seals having the same seal cross-section.

(1) Permanent Repair

(a) Remove seal from aircraft (Ref. 52-31-05).

(b) Mark extent of damaged seal to be removed (Ref. Fig. 801).

NOTE: Remove enough seal material to permit clean cuts across undamaged areas of seal.

(c) Cut a section of replacement seal from undamaged section of seal having the same cross-section as seal being repaired. Replacement seal section should be at least as long as area marked in Step 4B(i)(b).

(d) Lay replacement section of seal over seal damage area, and mark seal area to be removed, using edges of replacement seal for guide.

(e) Remove damaged section of seal by making a smooth butt cut on each side of damage. Butt ends of replacement seal section must fit together accurately with butt ends of seal being repaired.

(f) Using a clean cotton cloth dampened with solvent, thoroughly clean the seal surfaces and butt ends to be joined, for a distance of at least one inch beyond either end of the seal area to be spliced. Wipe seal dry before solvent evaporates, using clean dry cloth.

CAUTION: DO NOT ALLOW SOLVENT TO SOAK INTO SEAL. AFTER CLEANING SEALS FOR SPLICE REPAIR, EXERCISE CARE TO PREVENT CONTAMINATION OF SEAL SPLICE AREA WITH DIRT OR OIL.

(g) The splicing in of a replacement section of seal requires two splice joints. Complete one splice before starting the second.

(h) Cut two pieces of Dacron reinforcing material (one for each splice). Each piece should be a minimum of three inches long, and wide enough to wrap completely around the seal periphery. The edges of the reinforcement fabric should be located below the foot portion of the seal.

(i) Apply a continuous coating of adhesive (RTV-157) on seal, approximately 0.010 inch thick, over entire area to be covered with Dacron reinforcement fabric, and also to butt ends of seal joint. R

R (j) Press together and hold butt ends of seal splice
R joint, maintaining alignment of all edges and
R surfaces.

R (k) Place one wrap of Dacron fabric around outside of
R seal splice (butt) joint, with fabric centered
R over joint. A minimum of 1-1/2-inch of fabric
R should extend along each side of seal splice.
R Edges of wrap should terminate along bottom side
R of seal.

R (l) Firmly press fabric on adhesive, and carefully
R remove wrinkles. The adhesive which extrudes at
R edge of fabric must be smoothly faired along edge
R of fabric to contour with the seal.

R (m) Carefully prepare second splice as described in
R Steps 4B(1)(i) through 4B(1)(l), being careful to
R avoid twisting or stretching the first splice.

R NOTE: Silicone adhesives cure most rapidly in a
R humid atmosphere and moderate temperature
R conditions. Heat lamps are not recommended
R since excessive heat may cause gelling of
R the adhesive (a condition in which cure
R will not occur).

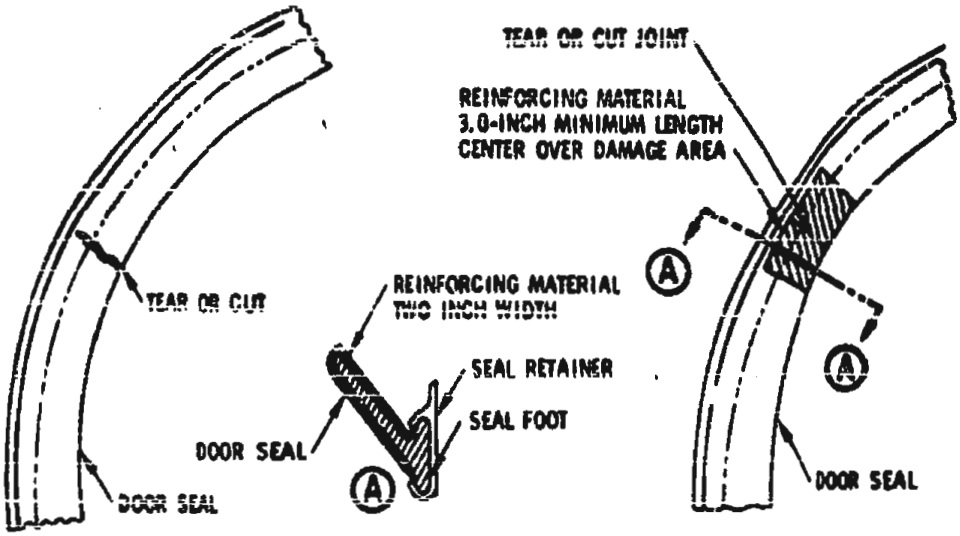
R (n) Apply bead of RTV157 silicone adhesive,
R approximately 1/8-inch wide, along interface of
R seal and seal retainer on pressure side of seal,
R completely around seal. Smooth fillet and allow
R to cure two hours before pressurization.

C. On Aircraft 001-999 With SB52-184, Major Damage (Corner Seals)

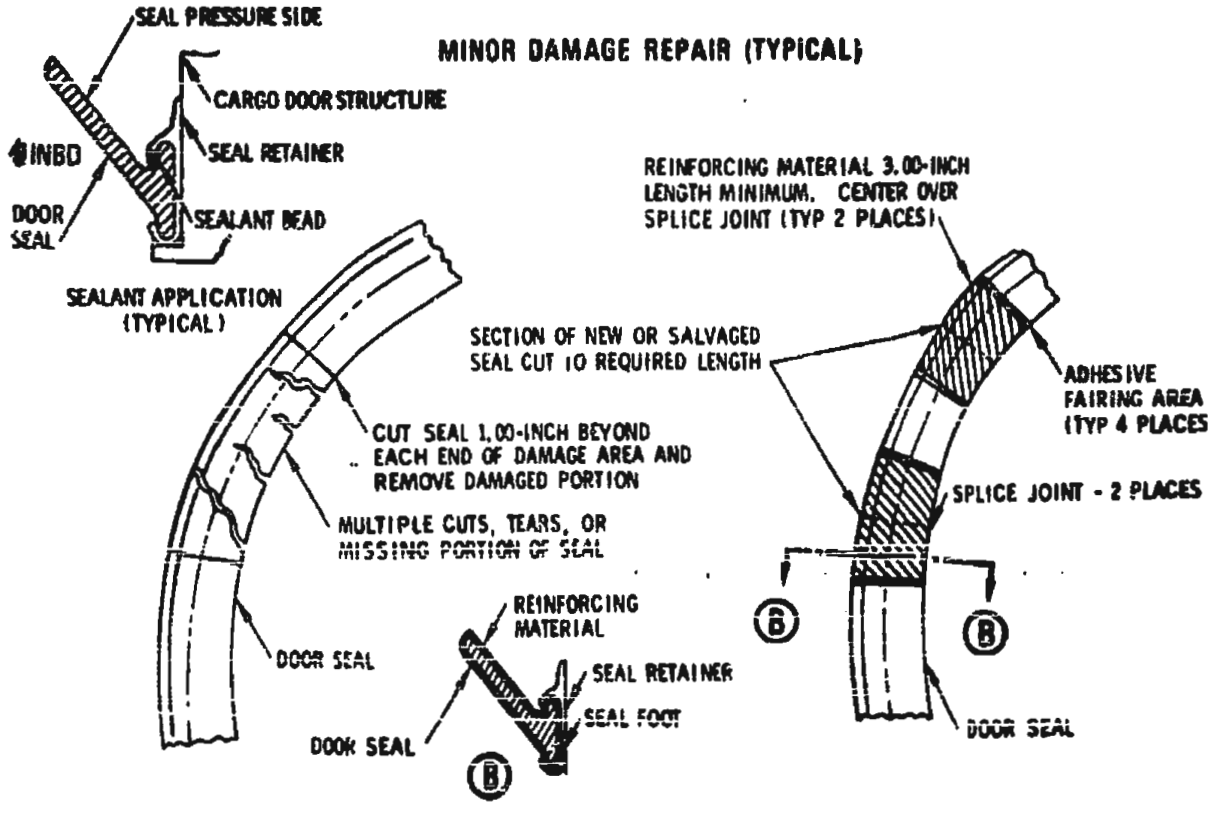
Damage involving multiple cuts or tears, or damage resulting in loss of seal material, requires removal of damaged corner seal and replacement with a new corner seal.

There are two cargo door seal repairs outlined in this procedure. The full-cure repair [Paragraph 4C(1)] is more easily accomplished if the full eight-hour cure time is available. The alternate (less-elapsed time) repair [Paragraph 4C(2)] may be accomplished in approximately two hours if time is not available for the full-cure repair. Either procedure may be accomplished to replace a corner segment of a door seal.

(1) Full Cure Repair



MINOR DAMAGE REPAIR (TYPICAL)



MAJOR DAMAGE REPAIR (TYPICAL)

M1-0001-32-147

Cargo Door Seals - Approved Repairs
Figure 801

R

EFFECTIVITY: ALL

001B

(a) Cut and remove damaged seal corners at splice joints as shown in Fig. 802.

(b) Install new corner seal and trim as required for splicing (Ref. Fig. 802, View A). Trim for tight fit 0.030 inch max gap allowed.

(c) Fabricate from LS13548 X 8 inch seal or alternate material, two splice pieces 3.5 inches by 0.90 inch.

(d) Remove 6 inches of seal from retainer, both sides of joint.

CAUTION: DO NOT ALLOW SOLVENT TO SOAK INTO SEAL.

(e) Clean edges and surfaces of splice with solvent. Wipe dry with clean dry cloth before solvent evaporates.

(f) Butter the splice strip and area where splice strip covers with a thin layer of RTV157 (approximately 0.030 inch thick).

(g) Staple splice strip one side of seal and then bring joint together and completely staple joint (Ref. Fig. 802) using Salco P694 staple gun and 1/2 inch staples.

(h) Using pliers, crimp installed staples to make them flush on both sides.

(i) Fill gaps and voids around periphery of splice with adhesive (Ref. Fig. 802, Views B and C). Apply thin coating (0.030) of adhesive over flush sides of staples.

(j) Smooth adhesive with finger or tool wetted with solution of 50 percent liquid soap and water, and wipe ramaining area dry.

CAUTION: THE MINIMUM CURING TIME IS EIGHT HOURS. The minimum curing temperature is 65°F.

(k) Allow silicone adhesive to cure before closing door.

NOTE: Silicone adhesive cures most rapidly in humid atmosphere and moderate temperature conditions. Heat lamps are not recommended, as high temperature may cause

gelling of the adhesive (a condition in which cure will not occur).

(2) Alternate (Less elapsed time) Repair:

(a) Cut and remove damaged seal corners at splice joint as shown in Fig. 803.

(b) Install new corner seal and trim as required for splicing per Fig. 803, View A. Trim for tight fit (0.030 inch max gap allowed).

(c) Fabricate from LS13548 X 8 inch seal or alternate material, two splice pieces 3.2 inches by 0.80 inch (Ref. Fig. 803).

(d) Remove 6 inches of seal from retainer, both sides of joint.

CAUTION: DO NOT ALLOW SOLVENT TO SOAK INTO SEAL.

(e) Clean edges and surfaces of splice with solvent. Wipe dry with clean dry cloth before solvent evaporates.

(f) Butter the splice strip and area where splice strip covers with a thin layer of RTV157 (approximately 0.030 inch thick).

(g) Staple splice strip one side of seal and then bring joint together and completely staple joint (Ref. Fig. 803), using Salco P694 staple gun and 1/2 inch staples.

(h) Using pliers, crimp installed staples to make them flush on both sides.

(i) Fill any gap at butt joint with RTV157 and smooth joint.

(j) Smooth adhesive with finger or tool wetted with solution of 50 percent luquid soap and water, and wipe remaining area dry.

(k) Cut 6 inch long strip of Thermosetting Glass Cloth Tape per MIL-I-19166C, 3-inch wide.

(l) Center tape on flat side of seal and smooth out.

(m) Wrap tape around foot and trim short of far edge (Ref. Fig. 803). Smooth tape down on foot.

(n) Wrap tape around tip of seal, tuck in foot area around splice strip, wrap around foot, and trim short of far edge (Ref. Fig. 803). Smooth down tape.

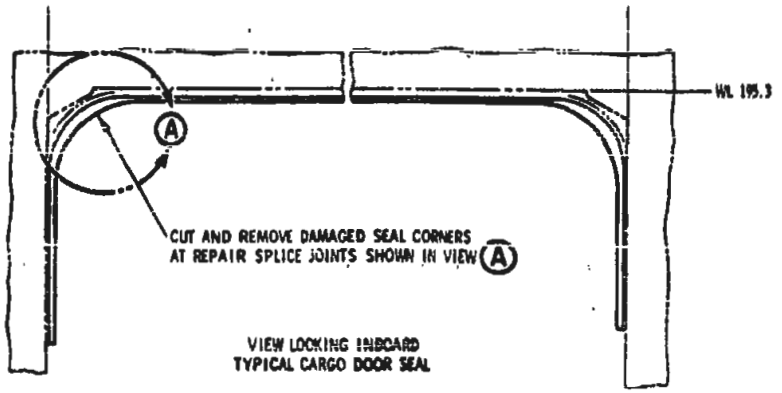
(o) Using heat gun, apply heat to entire area covered by Thermosetting tape for 5 to 10 minutes.

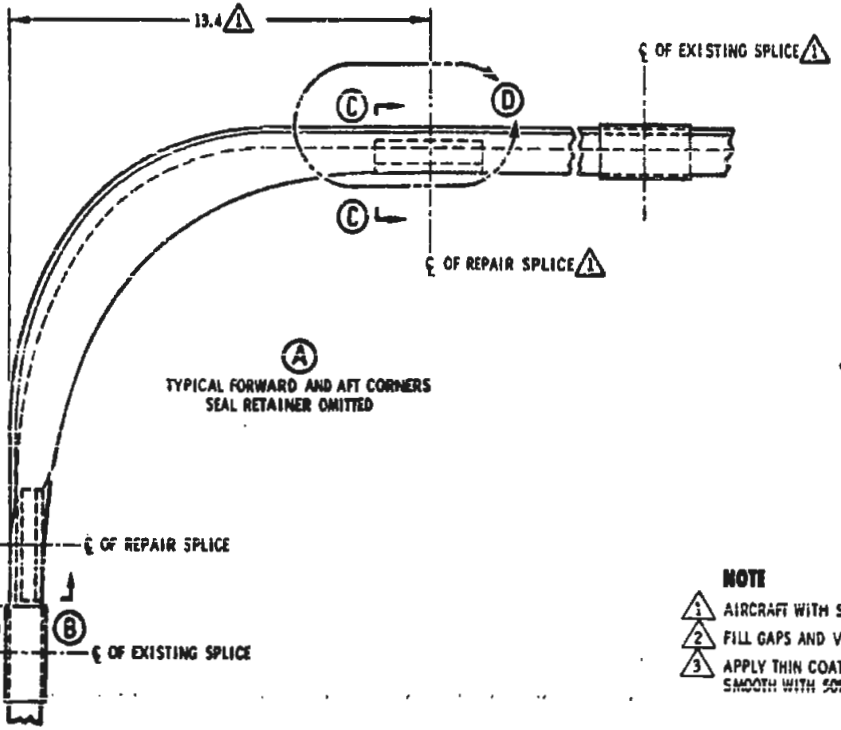
(p) Allow joint to cool to the touch.

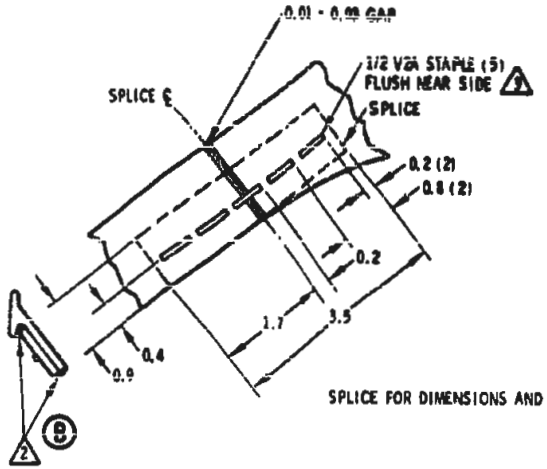
(q) Install seal repair joint into retainer and smooth out any wrinkles in tape in seal contact area.

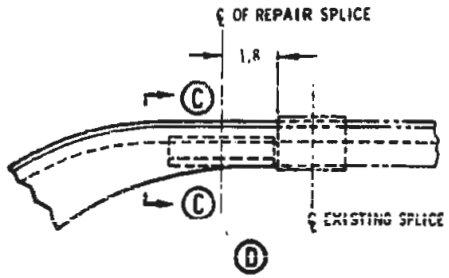
(r) Add RTV fillet at ends of splice strip and smooth.

(s) Add 0.125 inch diameters bead of RTV to the seal foot at the edge of the retainer, the new corner, and all areas where the seal was removed (Ref. Fig. 803). Smooth the bead of RTV.


WL 195.3
A
CUT AND REMOVE DAMAGED SEAL CORNERS AT REPAIR SPLICE JOINTS SHOWN IN VIEW A
VIEW LOOKING INBOARD
TYPICAL CARGO DOOR SEAL

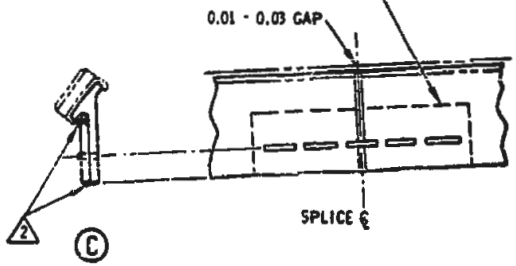






AIRCRAFT WITHOUT SB 093-52-126

SPLICE FOR DIMENSIONS AND CALLOUTS SEE B



NOTE

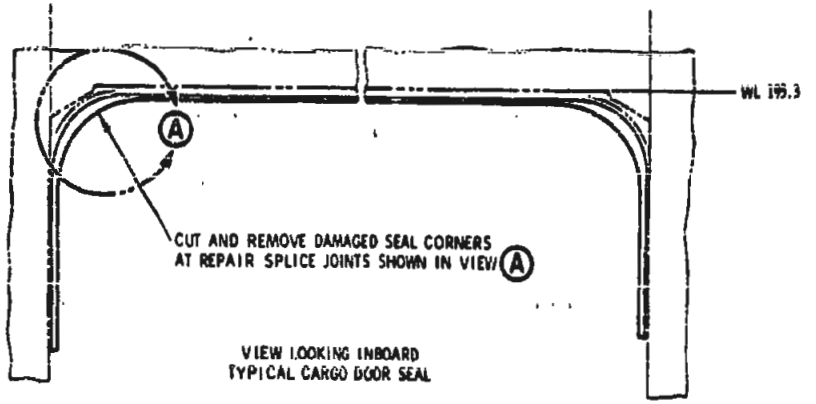
1 AIRCRAFT WITH SB 093-52-126 (C2 DOOR)
2 FILL GAPS AND VOIDS AROUND PERIPHERY OF SPLICE WITH RTV157
3 APPLY THIN COAT (.030) OF RTV157 OVER FLUSH SIDE OF STAPLES. SMOOTH WITH 50% SOAP SOLUTION

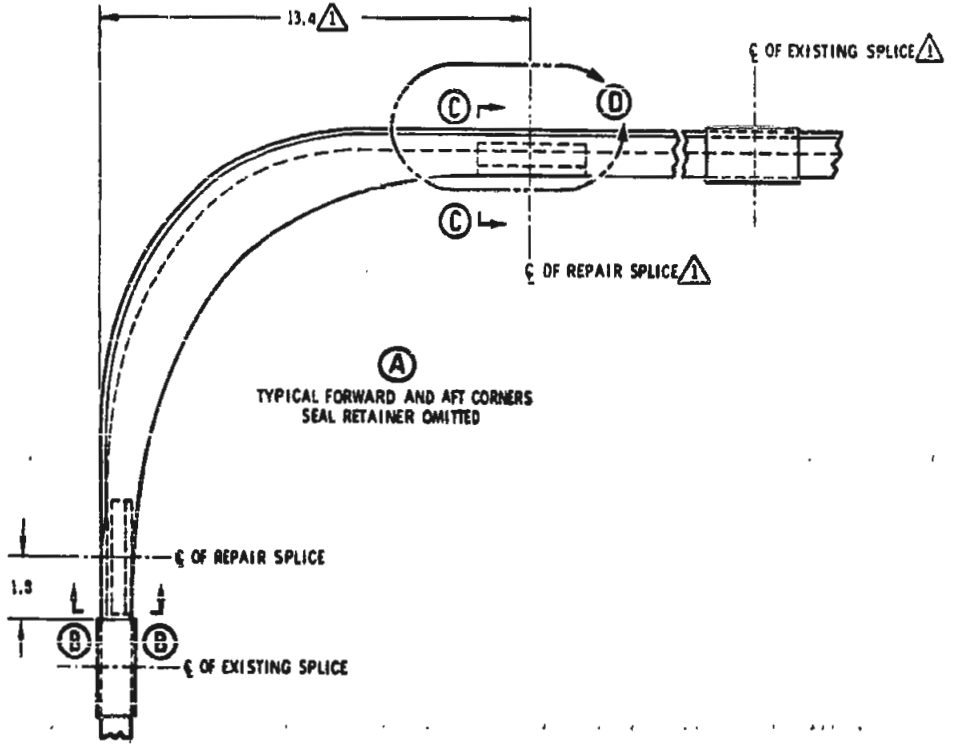
M1-0001-52-135

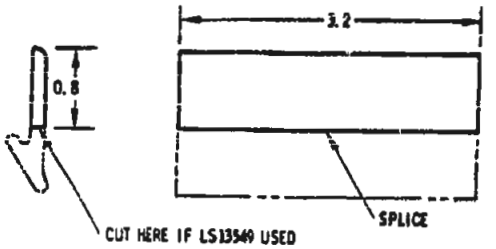
R Cargo Door Corner Seal - Full Cure Repair
R Figure 802

EFFECTIVITY: ALL

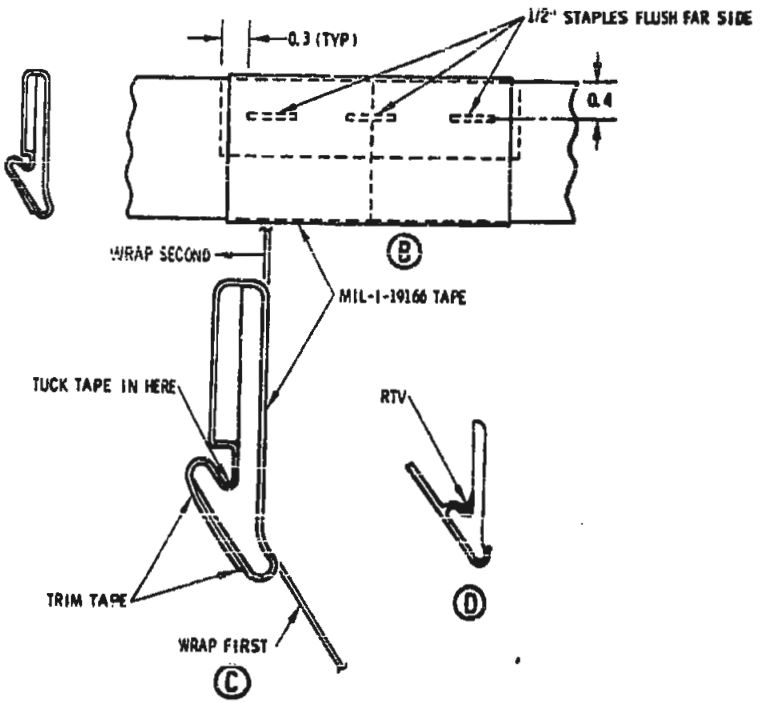
001B


WL 199.3
A
CUT AND REMOVE DAMAGED SEAL CORNERS AT REPAIR SPLICE JOINTS SHOWN IN VIEW A
VIEW LOOKING INBOARD
TYPICAL CARGO DOOR SEAL





DETAIL OF SPLICE STRIP



MI-000D-52-137

R Cargo Door Corner Seal - Alternate Repair
R Figure 803

R EFFECTIVITY: ALL
R
001B

R

CARGO DOOR LINER - REMOVAL AND INSTALLATION

1. General

The door liner (Ref. Fig. 401) installation consists of two distinctly different types of covering. The upper half is an insulated vinyl-coated fabric blanket, and the lower half is made of insulated plastic laminate panels. The upper blanket is retained with hook and pile tape and snap fasteners. The lower panels are retained with screws. A procedure for removing and installing each type of liner is specified.

2. Referenced Procedure

52-34-00 Cargo Door Actuation System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Gain access to inboard side of cargo door (door opened as required) (Ref. 52-34-00).

WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(2) Tag electrical and manual door controls.

(3) Remove lower panel as follows:

(a) Remove screws, washers, and retainers.

(b) Remove panel.

(4) Remove upper blanket as follows:

(a) Pull back flaps retained with hook and pile tape.

(b) Release snap fasteners around outer edge of door.

(c) Peel back blanket to release hook and pile tape at beams and ribs, as required for access or complete removal.

B. Installation

(1) Gain access to inboard side of cargo door (door opened as required) (Ref. 52-34-00).

WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

(2) Verify that tags installed in Step 3A(2) are in position.

(3) Install lower panel as follows:

R NOTE: On aircraft with SB52-158, lower panel for C-1 door must be modified prior to installation by cutting out notch in mid-lower edge according to SB52-158, Fig. 1 (Sheet 7).

(a) Position panel on door with a few screws and washers.

(b) Install retainers, washers, and screws around outer edge of door.

(4) Install upper blanket as follows:

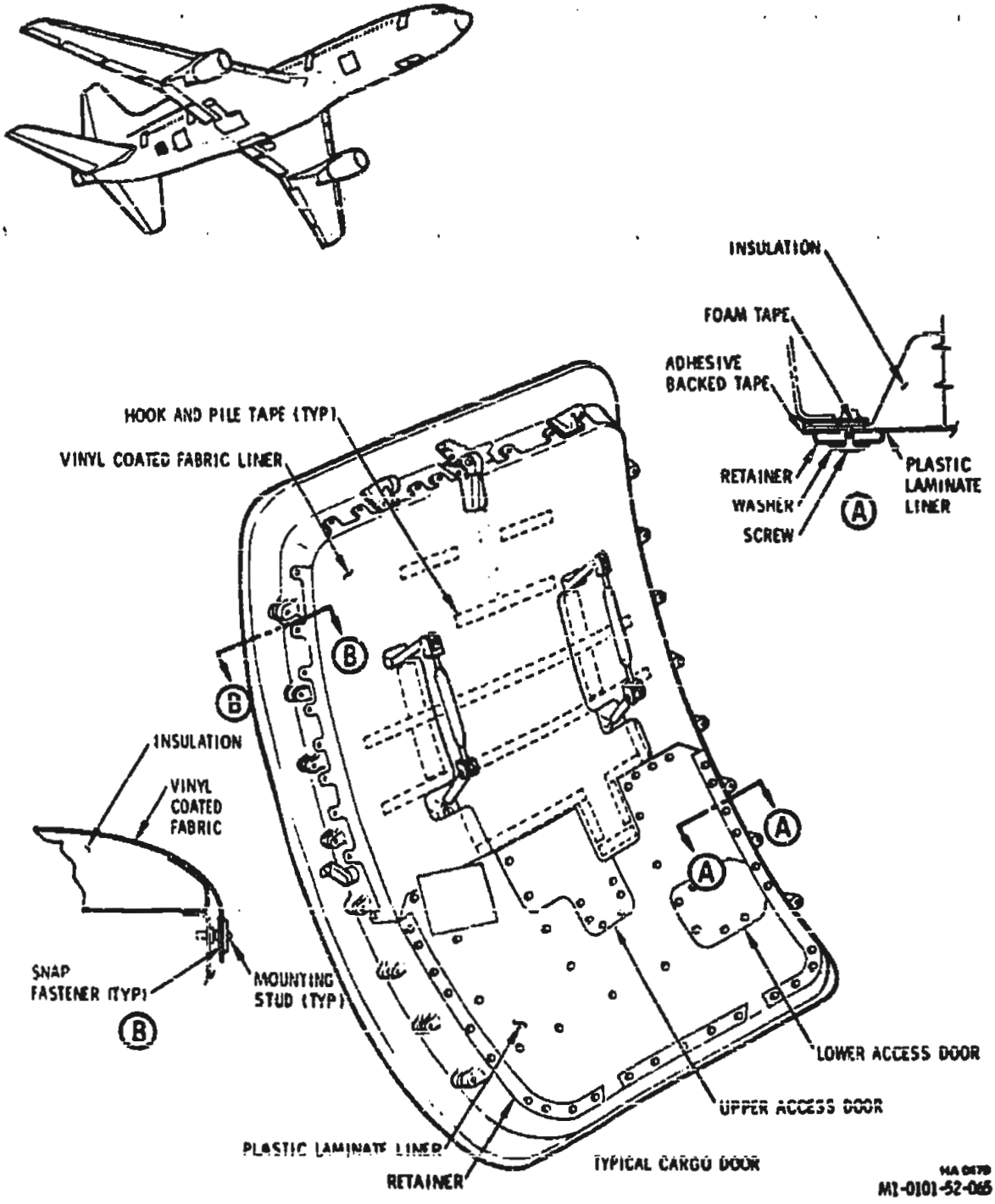
(a) Position blanket on door with cutouts at door lifting arms.

(b) Align snap fasteners at outer edges with snap studs. Install all outer snap fasteners.

(c) Press down at all beams and ribs to engage hook and pile tape.

(d) Remove tags from electrical and manual door controls.

(e) Close door.



R R Cargo Door Liner - Removal and Installation
Figure 401

R EFFECTIVITY: ALL
R
001B

CARGO DOOR LATCHING ACTUATOR - REMOVAL AND INSTALLATION

1. General

The door latching actuator is located on the inboard side of the cargo door.

NOTE: To facilitate removal of the cargo door exterior access plates, attaching panhead screws NAS 5203U and NAS 5204U can be replaced by hex-head bolts NAS 6403U and NAS 6404U in lengths equal to replaced screws.

C-2 cargo door fairing fasteners NAS 4603U and finishing washers LS 13013A can be replaced by NAS 6403U bolts with AN 960C washers. Bolt length must be equal to replaced fastener.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Cotter pin, MS 24665-302

3. Referenced Procedures

52-30-19 Cargo Door Safety Stop - Adjustment and Test

52-34-00 Cargo Door Actuation System - Adjustment and Test

4. Removal/Installation

WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON THE DOOR.

A. Removal

(1) Gain access to inboard side of cargo door (Ref. 52-34-00).

CAUTION: IF ACTUATOR IS TO BE REMOVED WITH THE DOOR IN THE CLOSED POSITION, AN ASSISTANT SHOULD BE STATIONED OUTSIDE TO PROVIDE AID IN CASE OF EMERGENCY.

NOTE: The actuator can be more easily removed with the door latch mechanism in the latched position (actuator retracted) and with the door in the open position. With door open, it should be

hanging down from the door hinge gear boxes. In this position, the door should be supported to prevent it from dropping and disengaging the lockup link roller bearings from the latching mechanism torque tube lockup cams when the actuator is removed.

(2) Tag electrical and manual door controls.

(3) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(4) Remove center access panels on outside and inside of C-1 or C-3 door, or the inside access panel of C-2 door to gain access to latch actuator.

NOTE: If actuator can be removed with the C-2 door open, removal may be performed without removing door fairing. If access from outside of door is required, the door fairing assembly must be removed.

(5) Peel up lower edge of upper insulation blanket on inside of door for access to actuator.

(6) Disconnect actuator electrical plug from receptacle and remove clamp (Ref. Fig. 401).

(7) Disconnect manual drive flex shaft at actuator.

(8) Remove cotter pin from manual drive knob shaft and remove knob and shaft assembly.

(9) Remove attaching bolt at upper and lower ends of actuator.

NOTE: If actuator failed in extended position and attachment bolt at actuation crank assembly (upper end) is installed backward (bolt head facing aft), bolt must be cut off to remove actuator.

(10) Remove actuator.

NOTE: If C-1 or C-2 door actuator failed in extended position, remove actuator through external door by swinging actuator outboard until sufficient clearance is gained. If C-3 door actuator failed in the extended position, proceed as follows:

(a) Remove bolt which fastens actuation crank assembly to torque tube and slide crank assembly for sufficient access to upper rod end of actuator.

(b) Turn upper rod end sideways to clear crank assembly, cut lock-wire and screw out upper rod end fitting.

(c) Remove actuator.

(d) Reinstall actuation crank with bolt, washer, and nut.

(e) On actuator, reinstall manual drive shaft and spacer assembly, knob assembly, and cotter pin.

B. Installation

(1) Verify that electrical and manual door controls are tagged and that circuit breakers opened in Step 4A(3) are open and tagged.

(2) Verify that the latching actuator is electrically actuated to the retracted position.

CAUTION: LATCH ACTUATOR KNOB MUST NOT BE ROTATED FURTHER MANUALLY.

(3) When preparing actuator for installation, remove cotter pin from actuator manual drive knob shaft and remove knob assembly.

(4) Position actuation crank assembly on the door latching torque tube so that there is a clearance of 0.025 to 0.035 inch between actuation crank and stop bolt (Ref. Fig. 401).

CAUTION: DO NOT ADJUST STOP BOLT TO ATTAIN THIS DIMENSION. THIS STOP BOLT IS FACTORY SET AND MUST NOT BE CHANGED UNLESS IT HAS BEEN DETERMINED THAT THE STOP BOLT ADJUSTMENT HAS BEEN TAMPERED WITH.

(5) Verify stop bolt factory adjustment as follows:

With the latch actuator in the retracted position and the clearance between the actuation crank and the stop bolt is 0.025 to 0.035 inch, the clearance between the torque tube latch crank roller and the adjacent clip (using the aft side of the door frame) must be .750 (±0.010) inch (Ref. Fig. 401). If the .750 (±0.010) inch dimension cannot be met, position the latch crank to the .750 inch dimension and set the stop bolt to

provide 0.025 to 0.035 inch clearance between the actuation crank and stop bolt.

(6) Loosen actuator rod-end locknut.

(7) Adjust actuator length to permit installation with actuation crank assembly positioned as described in Step 4B(5).

(8) Install bolts at both ends of actuator, insuring that bolt at upper rod end is installed with bolt head forward.

NOTE: Do not tighten nuts to secure actuator at this time.

(9) After cargo door latch actuator rigging, the door should be checked for correct rig of the latch actuator and to verify that the stop bolt adjustment has not been tampered with.

(10) Verify that the clearance between the actuation crank and stop bolt is 0.025 to 0.035 inch.

(11) Remove actuator. Lock rod-end locknut, and lock-wire to lock tab.

CAUTION: UPPER ATTACHMENT BOLT THROUGH ACTUATOR ROD END BEARING MUST BE INSTALLED WITH BOLT HEAD FORWARD (REF. FIG. 401).

(12) Reinstall actuator with bolts (bolt heads forward), washers, and nuts. Tighten nuts until snug.

(13) Install manual drive flex shaft. Tighten nut and lock-wire. Flex shaft must have a natural bend transition from actuator to manual drive (free of kinks or sharp bends). Correct if necessary, by repositioning flex shaft support clamps.

(14) Connect actuator electrical plug to receptacle and install cable support clamp. Lock-wire plug to receptacle.

(15) Install manual knob on actuator and retain with cotter pin.

(16) Remove door support, if used.

CR CR (17) Check the safety stop clearance adjustment (Ref. 52-30-19, Adjustment/Test, Para. 4.B.).

CR (18) Remove tags from electrical and manual door controls.

CR (19) Remove tags and close circuit breakers opened in Step CR 4A(3).

CR (20) Operate door electrically, and check for proper CR operation (Ref. 52-34-00, Adjustment/Test, Para. 4.B.).

(21) Check lift and pivot mechanism stop bolt adjustment per following Paragraph C.

(22) Install access panels on outside and inside of door. Fasten insulation blanket.

(23) Reinstall C-2 door-fairing, if required.

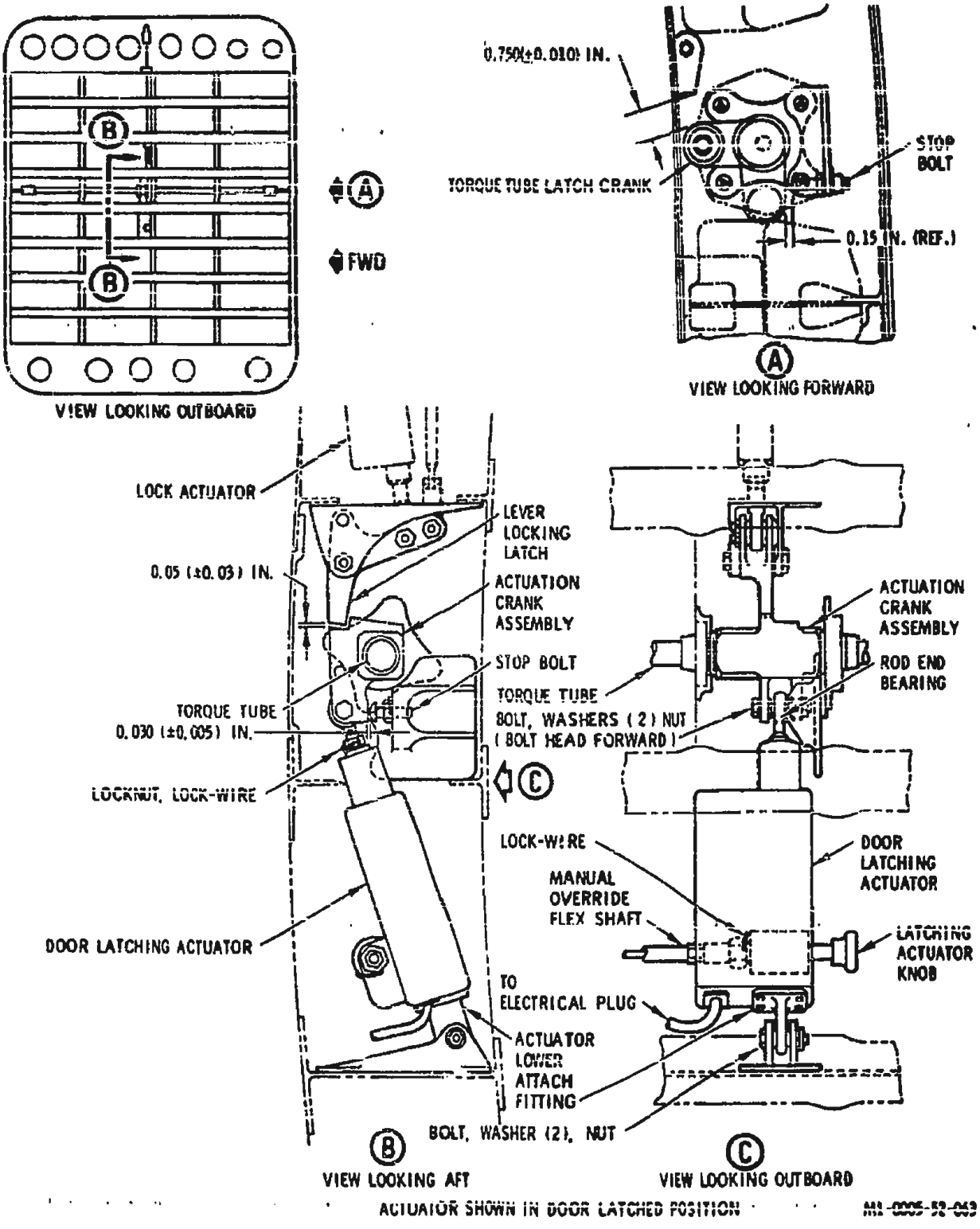
C. Lift and Pivot Mechanism Stop Bolt Clearance Check (Ref. Fig. 402)

(1) Operate door electrically to the partial open position (door hanging straight down).

(2) With latch actuator extended to the unlatched position, check for a clearance of 0.005 to 0.010 inch between the stop bolt and roller (or the aft locking link of the rearmost aft locking link of the C-2 door). Check clearance on both aft locking links of the cargo door.

CAUTION: STOP BOLT MUST BE ADJUSTED ONLY WHEN LATCH ACTUATOR IS IN UNLATCHED (DOOR OPEN) POSITION OR STOP BOLT MAY BE DAMAGED.

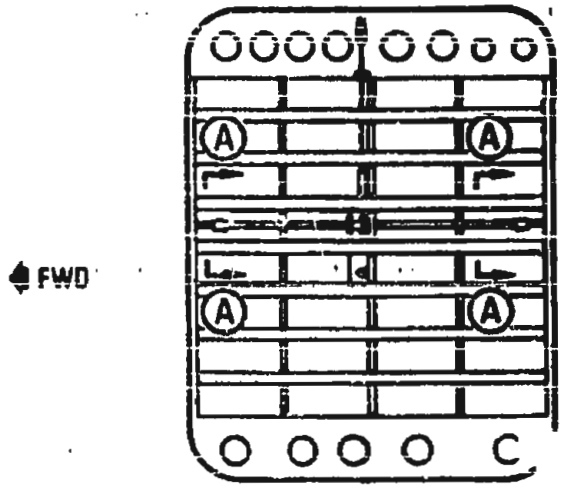
(3) If clearance does not meet requirement of Step (2), adjust stop bolt.



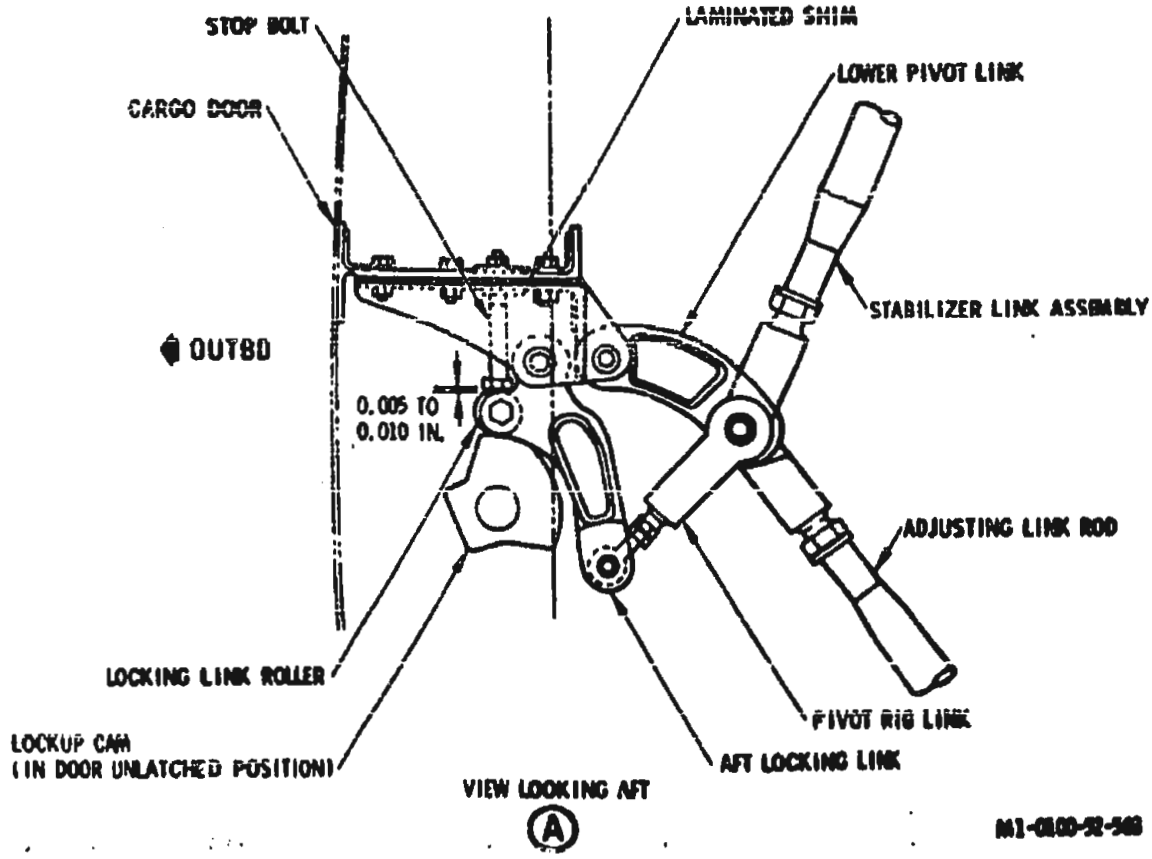
R Door Latching Actuator, C-1, C-2 and C-3 Doors
R Removal and Installation
R Figure 401

EFFECTIVITY: ALL

0018



TYPICAL CARGO DOOR



R Lift and Pivot Mechanism Stop Bolt Adjustment
R Figure 402

SAFETY STOP PUSH-PULL CABLE - REMOVAL AND INSTALLATION

Removal and installation of the safety stop push-rod (installed by SB52-122) is covered in 52-31-19.

1. General

The safety stop push-pull cable (Ref. Fig. 401) is located on the inboard side of each cargo door between the lock actuator and the safety stop assembly at the top of the door.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Rigpin, 0.312-inch diameter steel rod

Sealing Compound, LCM 40-2121 (Products Research Corp, PR 1431G Type I), or equivalent

C Silicone Fluid - DC 200/2

C Oil - General Purpose - MIL-L-7870

3. Referenced Procedures

24-41-00	External Power - Description and Operation
52-30-00	Cargo Doors - Description and Operation
52-30-22	Cargo Door Proximity Sensor - Adjustment and Test
52-31-03	Door Lock Actuator - Removal and Installation
52-31-07	Door Liner - Removal and Installation
52-31-19	Safety Stop Push Rod Control - Removal and Installation
52-34-00	Cargo Door Actuation System - Adjustment and Test

4. Removal/Installation

WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

A. Removal

(1) Gain access to inboard side of cargo door using electrical power.

(2) Electrically or manually actuate door lock actuator to locked (retracted) position.

(3) On Galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(4) Tag manual and electrical controls.

(5) Remove upper door lining as, required, to gain access to safety stop push-pull cable (Ref. 52-31-07).

(6) Remove nut, bolt, and washers from push-pull cable lower end bearing at lever locking latch (Ref. Fig. 401).

(7) Remove nuts from cable control support fittings at door beams No. 1 and 3.

(8) Remove clamp at beam No. 2.

(9) Remove nut, bolt, and washers from push-pull cable upper end bearing at safety stop assembly.

(10) Loosen jamnuts at push-pull cable upper end bearing and remove end bearing from control.

CAUTION: DURING REMOVAL, PUSH-PULL CABLE MAY BE MOVED TO A TEMPORARY MINIMUM BEND RADIUS OF 3 INCHES.

(11) Pull push-pull cable assembly down and out of door; avoid bending cable to a radius of less than 3 inches.

(12) Retain jamnuts with cable.

B. Installation

(1) Verify circuit breakers opened in Step 4A(3) are open and tagged, and verify door controls are tagged.

C (2) Lubricate cable with DC 200/2 Fluid and install
C flexible control into door through actuator support
C bracket and cable support bracket so that cable jamnuts
C are located above and below support fittings at door
C beams No. 1 and 3 (Ref. Fig. 401).

NOTE: Push-pull cable must be installed with long slider tube end located next to the lock actuator.

(3) Install end bearing at upper end of cable.

(4) Before installing cable, check for free movement of safety stop mechanism as follows:

(a) Pull down on safety stop mechanism to unlocked position.

(b) Release safety stop, mechanism must move freely to locked position.

NOTE: Safety stop is spring-loaded to the locked position.

(c) If safety stop does not move freely to locked position, lubricate pivot bolt with light general-purpose oil.

(d) After application of oil, repeat Steps (a) and (b) to recheck for free movement of safety stop mechanism.

NOTE: Safety stop action must be free; if not, correct condition before continuing.

(5) Tie back safety stop to the unlocked position with string.

NOTE: This is required to permit door closure without interference with structure or striker fitting.

(6) Remove tags and close circuit breakers opened in Step 4A(3).

(7) Close door electrically to latched and locked position.

(8) Prepare for cable adjustment as follows:

(a) Tag door electrical and manual controls.

(b) Using lock actuator knob manually drive actuator to fully retracted position.

(c) Insert rig pin into lever locking latch rig pin hole.

CAUTION: LOCK ACTUATOR KNOB MUST NOT BE TURNED TO AID INSTALLATION OF RIG PIN.

NOTE: If rig pin cannot be installed, verify lock actuator is properly installed (Ref. 52-31-03).

(9) Release safety stop tied in Step 4B(5).

(10) Adjust end bearing at upper end of push-pull cable until threaded end of cable is visible in end bearing inspection hole.

(11) Mate push-pull cable upper end bearing with safety stop/bellcrank clevis and install bolt, washers, and nut.

(12) Check for free movement of safety stop push-pull cable before installing push-pull cable rod and bearing in lever locking latch.

(a) At lock actuator end (lower end), pull down on safety stop push-pull cable rod end bearing to move safety stop to the unlocked position.

(b) Release cable rod end bearing, safety stop must move freely to locked position.

NOTE: Safety stop is spring-loaded to the locked position.

(c) Lubricate safety stop push-pull cable with general-purpose grease if safety stop push-pull cable does not move freely to locked position.

(d) After application of grease, repeat Steps (a) and (b) to recheck for free movement of safety stop mechanism.

NOTE: Safety stop action must be free; if it is not, replace push-pull cable before continuing.

(13) On aircraft with Direct View System (SB52-105), position safety stop so that safety stop indicator lower edge appears within aperture lower slot when viewed through viewport.

C (13) On aircraft without Direct View System (SB52-105),
C position safety stop assembly with a clearance of 0.010 ± .005 inch between safety stop/bellcrank lower surface and safety stop support bracket stop bolt (Ref. Fig. 401).

(14) Adjust push-pull cable lower end bearing to mate with clevis of lever locking latch, then install bolt, washers, and nut.

CAUTION: PUSH-PULL CABLE MUST MAINTAIN A MINIMUM BEND RADIUS OF 10 INCHES AFTER INSTALLATION.

(15) Tighten push-pull cable jamnuts finger-tight at beams No. 1 and 3. Cable must assume a natural bend with no kinks.

(16) Remove rig pin from lever locking latch.

(17) Remove tags and close circuit breakers opened in Step 4A(3).

(18) Electrically extend and retract lock actuator and check that push-pull cable travel is not limited by end bearing jamnuts striking slider tube at either end of cable. If travel is limited by interference at either end, reposition push-pull cable outer sleeve as follows:

(a) Manually actuate lock actuator to locked position.

(b) Insert rig pin into lever locking latch rig pin hole.

(c) Loosen jamnuts at beams No. 1 and 3 and move push-pull cable outer sleeve up or down as required to eliminate interference to control travel at both ends.

(d) Tighten jamnuts finger-tight at door beams No. 1 and 3. Cable must assume a natural bend with no kinks.

(19) At door beam No. 1, tighten upper nut against bracket. Torque between 80 to 100 lb in, and lock-wire jamnuts.

(20) At door beam No. 3, tighten lower nut against bracket. Torque between 80 to 100 lb in. and lock-wire jamnuts.

(21) Install push-pull cable support clamp at door beam No. 2, with cable assuming a natural bend (no kinks).

(22) Tighten and lock-wire all end bearing jamnuts at upper and lower end of cable.

(23) With lock actuator in locked position, gap between C-1, C-2, or C-3 cargo door safety stop striker fitting should be 0.100 to 0.150 inch. If not, correct as follows:

(a) In C-3 compartment, remove or add laminated shim between safety stop striker fitting and sill.

Install shim with sealing compound and tighten safety stop striker fitting support bolts.

(b) In C-2 compartment, loosen safety stop support bracket attachment bolts and move serrated safety stop support bracket up or down as required. Tighten support bracket attaching bolts.

(c) In C-1 compartment, remove or add laminated shim between safety stop striker fitting and sill. Install shim with sealing compound and tighten safety stop striker fitting attach bolts.

NOTE: If gap correction is required, safety stop push-pull cable installation must be readjusted before continuing.

C (24) Check gap between proximity switch and target (at
C safety stop). Gap must be 0.010 ± 0.005 inch. If
C proximity switch requires adjustment, refer to
C 52-30-22, Adjustment and Test.

(25) Remove rig pin.

(26) Verify control cable is lubricated.

(27) Remove door control tags.

(28) Install door liner (Ref. 52-31-07).

(29) On aircraft without Direct View System (SB52-105), operate door and check for proper operation of lock actuator, safety stop, and cargo door caution and advisory lights (Ref. 52-34-00).

(29) On aircraft with Direct View System (SB52-105), verify operation of safety stop/proximity sensing system as follows:

(a) Prepare door for electrical operation (52-34-00, Paragraph 4A).

(b) Manually turn lock actuator knob in the extend (unlocking) direction approximately three turns. Verify applicable light on FE/SO annunciator panel comes on.

(c) Slowly turn manual knob on lock actuator in retract (locking) direction until annunciator light goes off. Verify LOCK ACTUATOR INDICATING (green) LIGHT on the door is off. If not, adjust

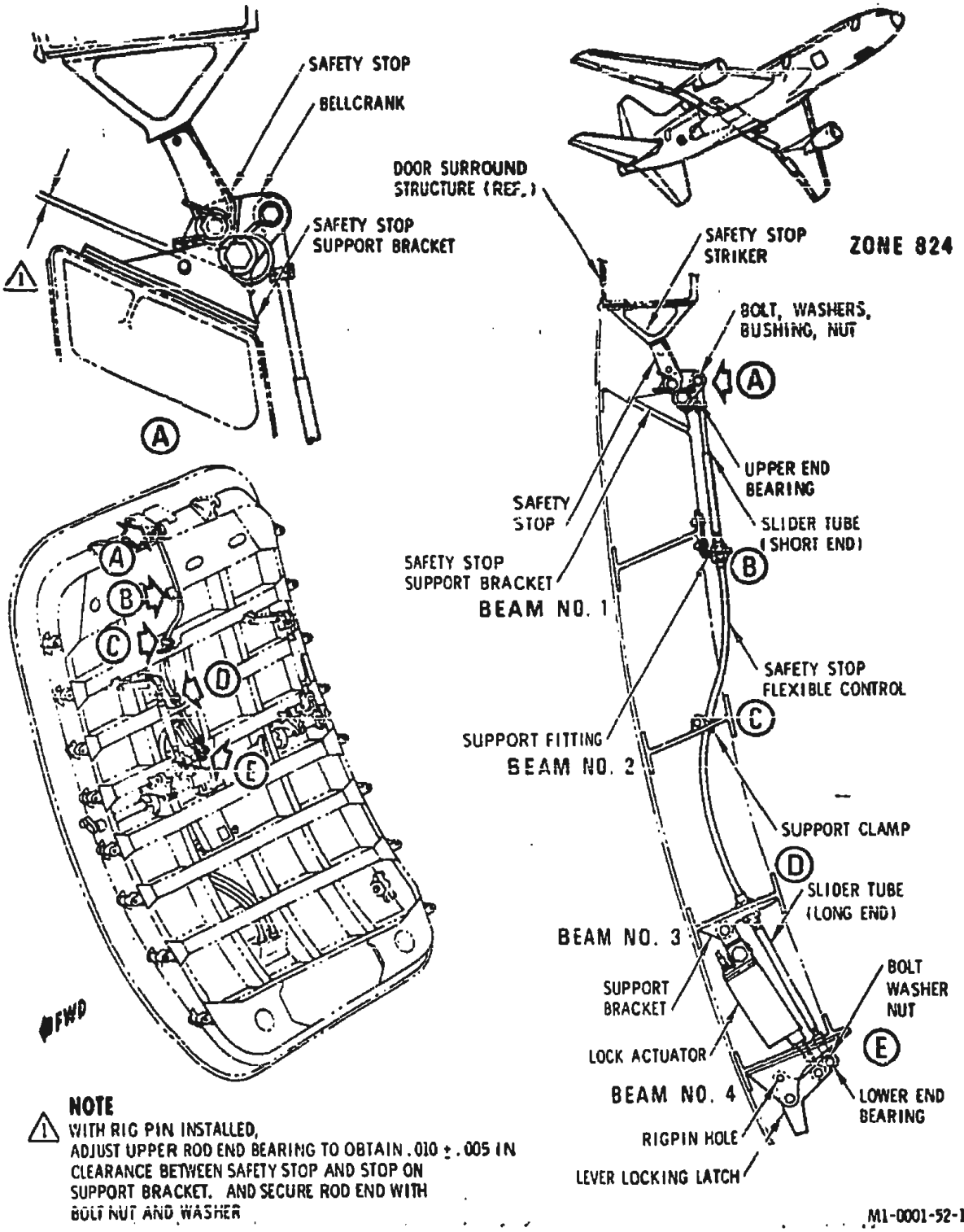
proximity switch closer to target and repeat Steps (b) and (c).

(d) Continue driving lock actuator manually until green light comes on.

(e) Slowly turn lock actuator knob in the extend (unlocking) direction.

(f) Check that applicable light on FE/SO annunciator panel comes on and LOCK ACTUATOR INDICATING (green) LIGHT goes off before lower edge of safety stop indicator leaves top of triangle aperture in aperture bracket when viewed through viewport.

(30) Lock door and turn off electrical power (Ref. 24-41-00).

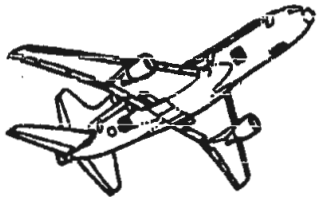


NOTE

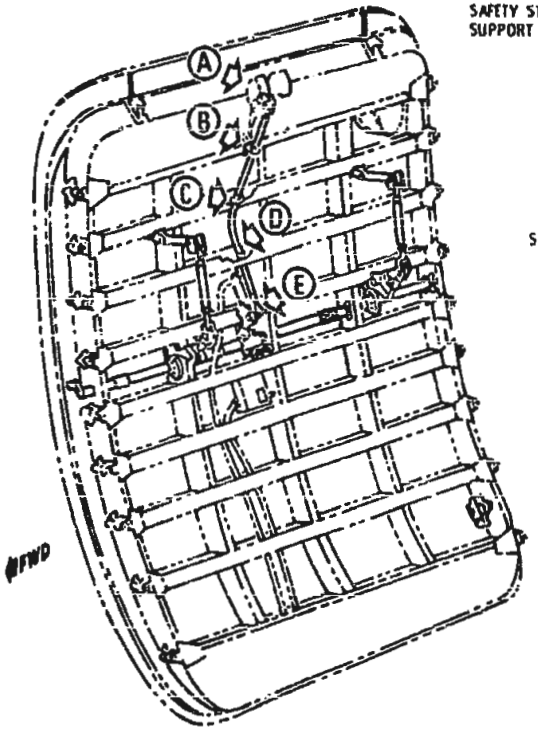
1. WITH RIG PIN INSTALLED, ADJUST UPPER ROD END BEARING TO OBTAIN .010 ± .005 IN CLEARANCE BETWEEN SAFETY STOP AND STOP ON SUPPORT BRACKET. AND SECURE ROD END WITH BOLT NUT AND WASHER

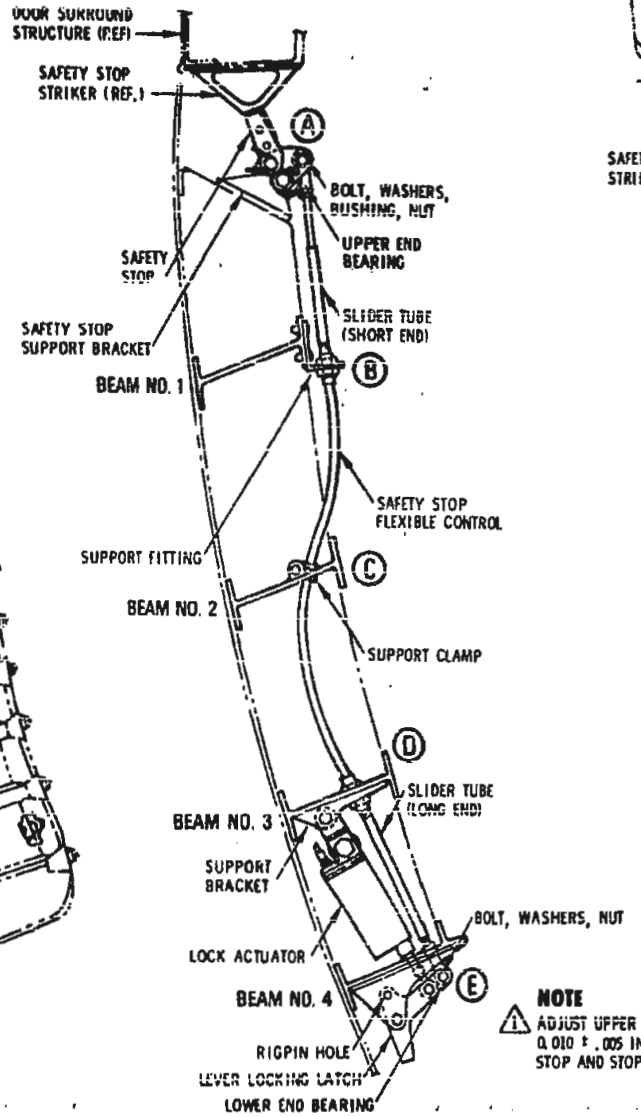
M1-0001-52-185

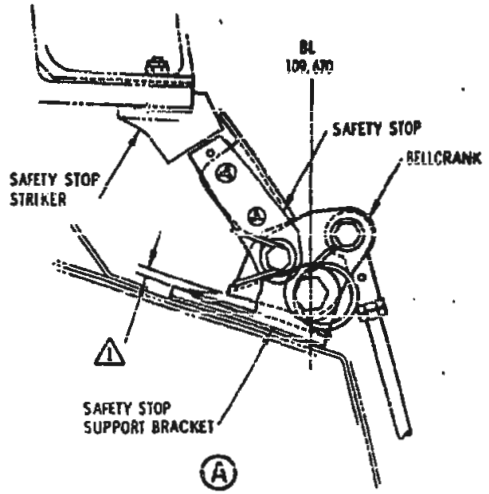
C C Safety Stop Push-Pull Cable - Removal and Installation
Figure 401



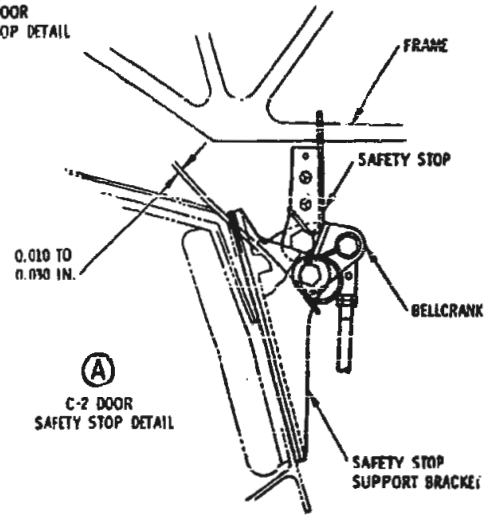
ZONES 821 AND 823







A
C-1 DOOR
SAFETY STOP DETAIL



A
C-2 DOOR
SAFETY STOP DETAIL

NOTE

1 ADJUST UPPER ROD END TO OBTAIN 0.010 ± .005 INCH BETWEEN SAFETY STOP AND STOP ON SUPPORT BRACKET.

M1-0000-52-L86

C C Safety Stop Push-Pull Cable - Removal and Installation
Figure 402

R R 001B EFFECTIVITY: 001, 003-013, 015-031

R CARGO DOOR CLOSED LIMIT SWITCH AND LIMIT SWITCH HEATER - REMOVAL AND
R INSTALLATION

1. General

The door closed limit switch is mounted inside the lower aft corner of each door and is actuated by a switch arm roller which comes in contact with the aft lower roller guide fitting. There are two versions of the door closed limit switch: a plunger-type switch or a rotary-type switch (SB52-127). This switch terminates door closing travel and transitions the door to the latching mode. DC control power is removed from the door close power control relay, which in turn removes AC power from the lift actuator.

2. Equipment and Materials

Lockwire Fed Spec QQ-W-390, 0.020-inch, or equivalent.

Ohmmeter

R Cotter Pin - MS24665-153

R Freon

R Solvent - 1-1-1 Trichloroethane, MIL-T-81533A, or equivalent

R Silicone Adhesive - RTV157 (LCM 30-2085, Type I), or equivalent

3. Referenced Procedures

52-31-16	Cargo Door Closed Limit Switch - Adjustment and Test
52-34-00	Cargo Door Actuation System - Adjustment and Test

R 4. Removal/Installation (Limit Switch)

R A. Preliminary

(1) Open cargo door electrically or manually until in vertical position, hanging down from gearboxes (Ref. 52-34-00).

(2) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(3) Tag electrical and manual door controls.

R (4) Remove access panel at lower aft corner of door liner.
R Move insulation blanket as required to gain access to
R cargo door closed limit switch.

R B. Removal (On aircraft with plunger-type or rotary-type switch
R without modular terminal block)

R (1) Tag and disconnect electric wires from switch
R terminals.

R (2) Remove switch lock nut and remove switch from bracket
R (Ref. Fig. 401).

R NOTE: Each terminal is numbered on switch housing.

R B. Removal (On aircraft with rotary-type switch with modular
R terminal block)

R (1) Tag and remove all electrical wires from pin-sockets of
R Positions 1 and 3 of the terminal block using blue
R pin-extractor tool (Ref. Fig. 402).

R On aircraft with switch heater,
R tag and remove switch heater electrical wires from
R pin-sockets A, C, and E of Position 2 of the terminal
R block using red pin extractor tool (Ref. Fig. 402).

R (2) Remove switch assembly bracket as follows:

R (a) Remove roller arm lockscrew and pull roller arm
R off roller arm shaft.

R CAUTION: AVOID PLACING UNDUE STRESS ON HEATER LEADS
R STILL ATTACHED TO ASSEMBLY WHEN WITHDRAWING
R HEATER EQUIPPED ASSEMBLY FROM MOUNTED
R POSITION.

R (b) Remove switch bracket mounting screws and remove
R switch bracket assembly from structure.

R NOTE: The switch bracket assembly must be removed
R to replace switch and to perform
R preliminary adjustment of the switch upon
R reinstallation.

R (c) Remove switch shaft locking nut.

R (d) Loosen switch locknut and withdraw switch from
R switch bracket.

R C. Installation (On aircraft with plunger-type switch)

R (1) Verify circuit breakers opened in Step 4A(2) are opened
R and tagged.

R (2) Verify electrical and manual door controls are tagged.

R (3) Install switch as follows:

R (a) Fasten switch to bracket with switch locking nut.

R (b) Lock wire switch locking nut.

R (4) Perform fine adjustment of door closed limit switch
R (Ref. 52-30-16).

R C. Installation (On aircraft with rotary-type switch)

R (1) Verify circuit breakers opened in Step 4A(2) are opened
R and tagged.

R (2) Verify electrical and manual door controls are tagged.

R (3) Install switch into bracket assembly as follows:

R (a) Insert switch into bracket assembly, passing
R switch shaft through hole in bracket, switch
R locknut, and hole in switch lever.

R (b) Tighten switch locknut and lock-wire.

R (c) Install but do not tighten locking nut on switch
R shaft end.

R NOTE: This nut is not tightened so that switch
R lever adjustments may be made.

R (4) Install switch roller arm on shaft of bracket assembly,
R insert bolt and tighten nut finger tight only.

R (5) Adjust stopbolt to obtain Dimension A with switch lever
R in door open position (stopbolt against bracket (Ref.
R Fig. 401).

R (6) Remove clevis pin at upper end of clevis assembly.

R (7) Adjust clevis length to obtain Dimension B.

R (8) Reinstall clevis pin and safety.

(9) On aircraft without modular terminal block, perform following with ohmmeter leads at switch terminals 4 and 5:

(9) On aircraft with modular terminal block, perform following with ohmmeter leads at switch leads marked 4-20 and 5-20:

(a) Turn switch lever arm wormscrew to rotate switch shaft clockwise for C-1 or C-2 door switches or counterclockwise for C-3 door switch (looking at switch shaft end) to close circuit. Continue to rotate switch shaft in same direction to open circuit as indicated by ohmmeter. R

NOTE: Switch adjustments for C-1 and C-2 cargo doors are different from those of C-3 cargo door. Adjustments for C-1 and C-2 cargo door closed limit switches are identical.

(b) Pivot roller arm counter clockwise (outboard direction when installed) until dimension between center of roller and switch bracket outboard face is at Dimension C (door closed postion).

(c) Use ohmmeter to verify circuit is closed. Turn wormscrew to rotate switch shaft, if required, to close circuit.

(d) Release roller arm and verify switch arm returns to door open position with stop bolt contacting switch bracket.

(e) Use ohmmeter to verify circuit is open.

(10) Verify locking nut on switch shaft is tightened and safety with new cotter pin.

(11) Verify locking screw on upper side of switch lever is retightened and safetied.

(12) Remove roller arm from assembly

(13) Install switch assembly onto cargo door with attaching screws.

(14) Install roller arm onto switch assembly shaft, insert bolt, washers and tighten nut.

(15) On aircraft without modular terminal block, connect wires to switch terminals and remove tags.

(16) On aircraft with modular terminal block, insert switch leads and all other wire leads removed in Step 4A(5) above into modular terminal block according to wire routing table (Ref. Fig. 402). Insert pins into Positions 1 and 3 of terminal block using blue insertion tool. Use red tool at Position 2 of the terminal block.

(17) Perform fine adjustment of door closed limit switch (Ref. 52-31-16, Adjustment and Test).

(18) Restore insulation blanket around switch assembly, if installed.

(19) Install lower access panel on door liner (Ref. 52-31-09).

CR 5. Removal/Installation (Switch Heater Element)(032-999)

This procedure calls for application of Silicone Adhesive RTV157 which must be allowed to cure for at least 24 hours before operation of the heater element.

Heater element replacement can best be accomplished with the Door Closed Limit Switch Assembly removed from the aircraft.

A. Removal

(1) Remove limit switch from cargo door (Ref. Step 4A).

(2) Remove heater element from switch assembly by twisting and pulling on element until the adhesive bond is broken.

CR (3) Remove residual adhesive from roller arm shaft by manually twisting an "R" letter size drill as required to clean hole.

B. Installation

WARNING: USE CLEANING MATERIALS IN WELL VENTILATED AREA. DO NOT INHALE VAPORS OR ALLOW CLEANING MATERIALS TO COME IN CONTACT WITH SKIN. KEEP CLEANING MATERIALS AWAY FROM OPEN FLAME.

(1) Clean inside diameter of roller arm shaft using clean cloth dampened with solvent (1-1-1 Trichloroethane) and wipe dry.

(2) Apply Adhesive (RTV157) to end of heater element to be inserted into roller arm shaft and to interior surface of roller arm shaft.

CAUTION: DO NOT OPERATE HEATING ELEMENT UNTIL ADHESIVE HAS CURED FOR AT LEAST 24 HOURS.

(3) Insert heater into roller arm shaft and allow to cure for a minimum of 24 hours before operating heater.

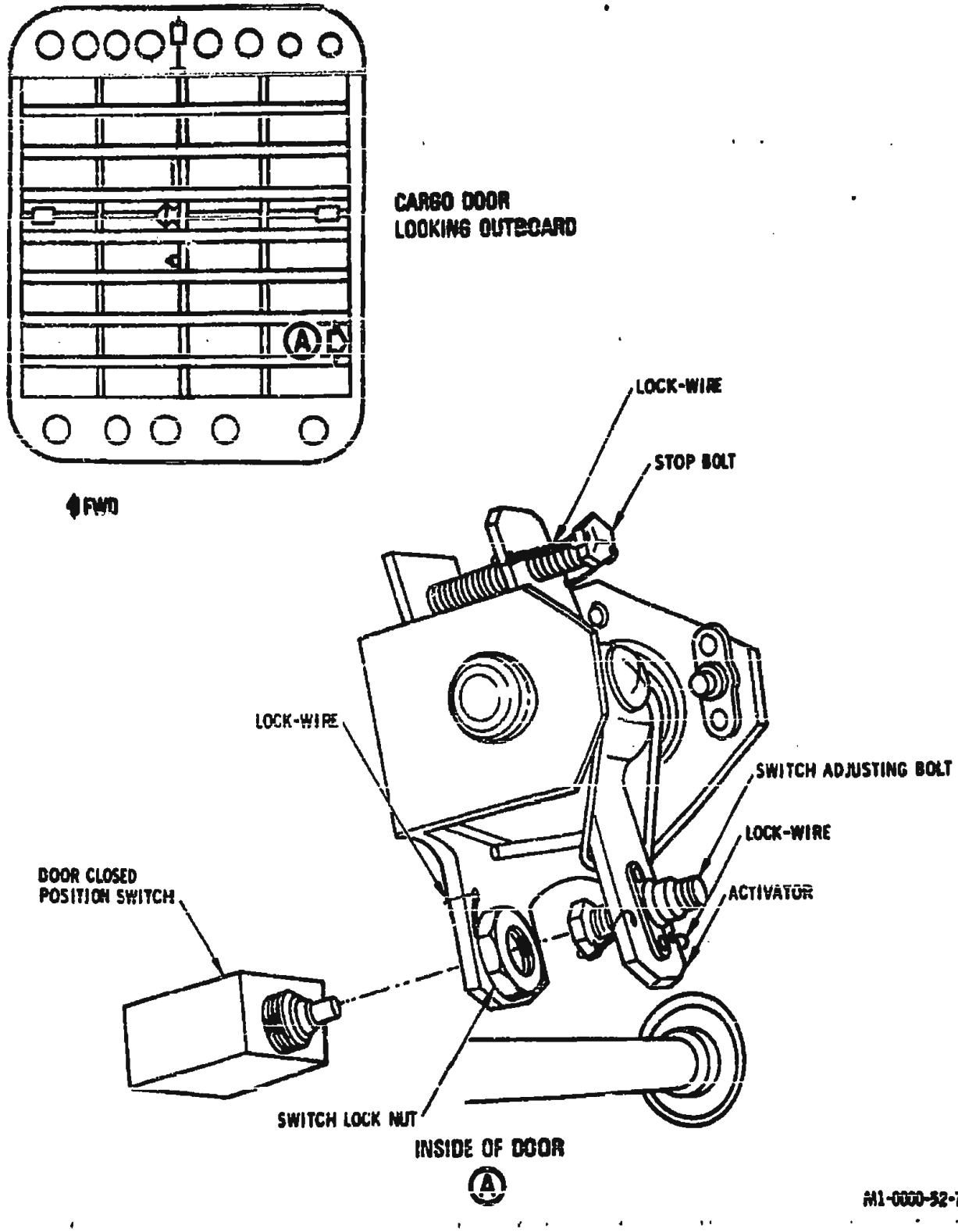
(4) Re-install limit switch on cargo door (Ref. Step 4C).

CR (5) Perform the following:

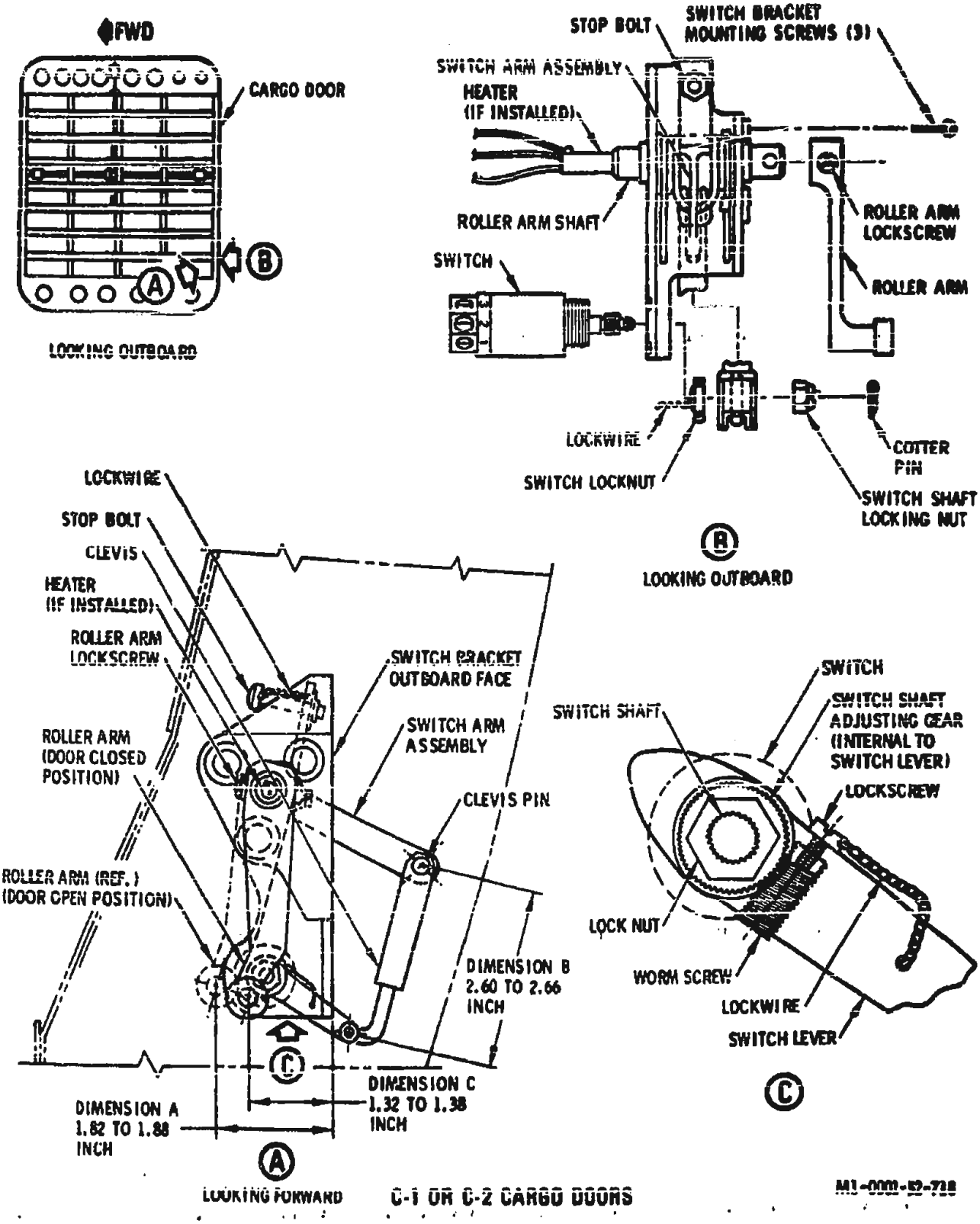
CR (a) If ambient temperature at cargo door is below
CR 35°F(1.5°C), proceed to Step (b).

CR If ambient temperatur at cargo door is 35°F
CR (1.5°C) or higher, chill heater thermostatic
CR control switch, mounted on beam in door, to below
CR 35°F (1.5°C) temperature using freon.

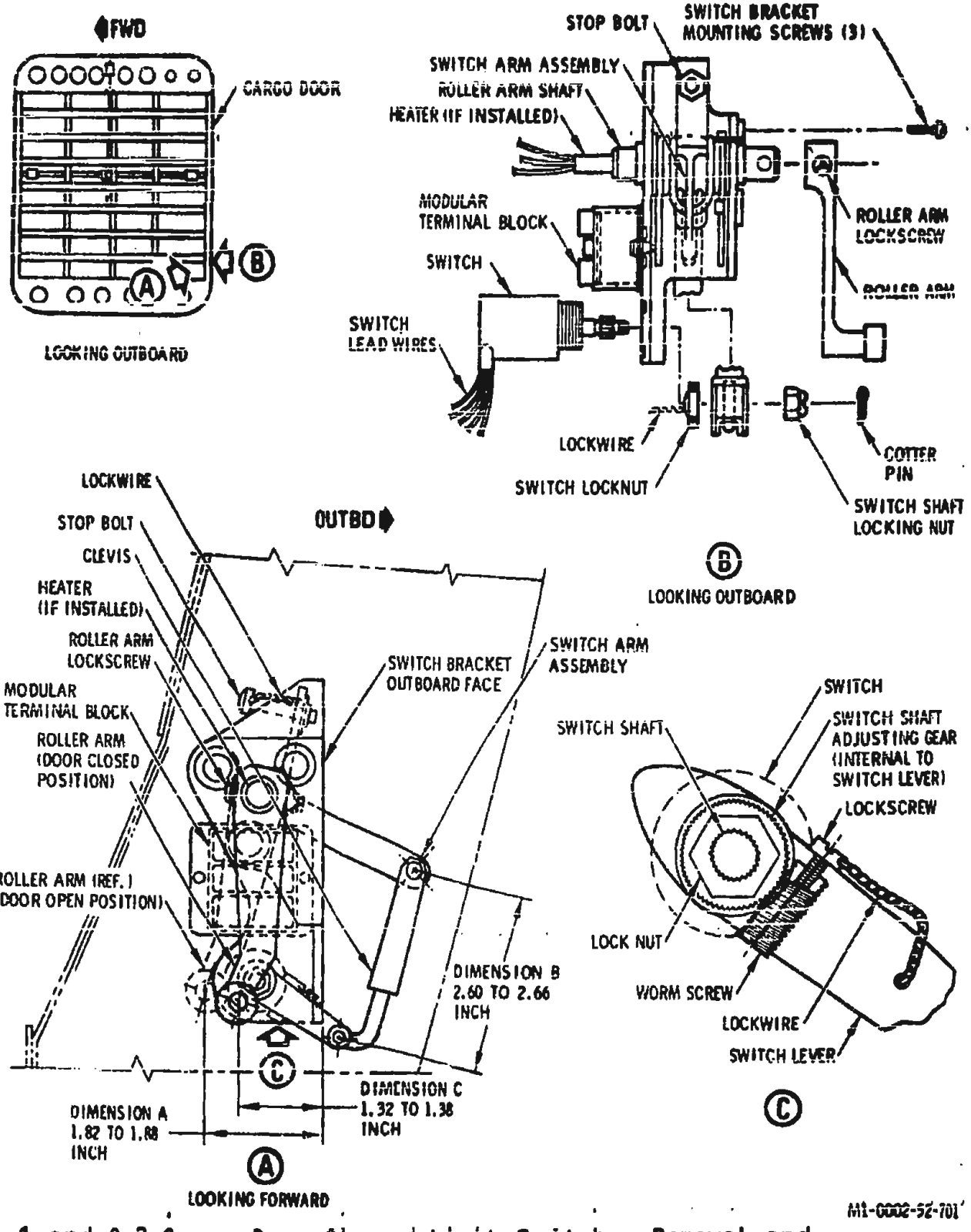
CR (b) Apply electrical power to heater circuit and
CR verify heater operation.



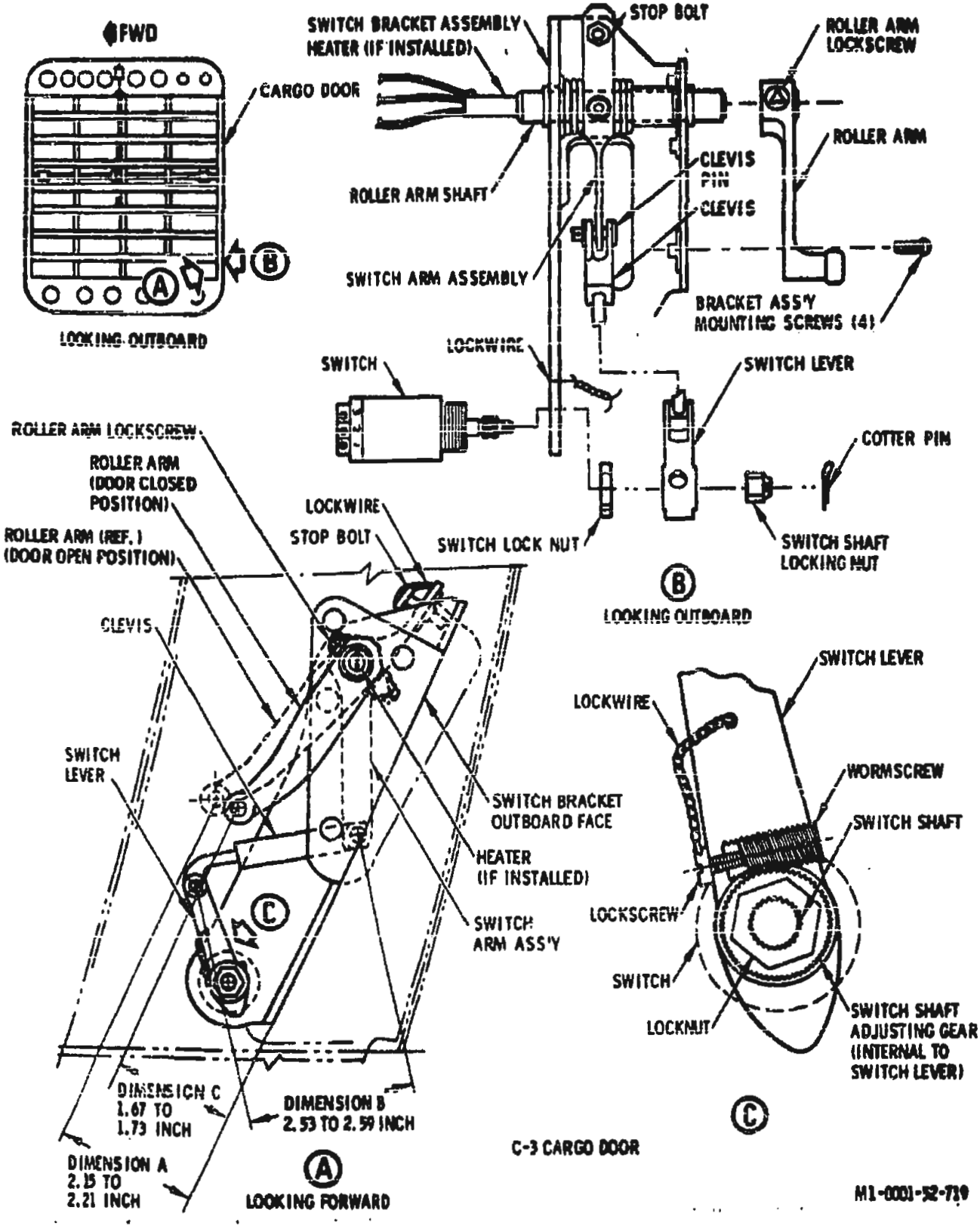
Cargo Door Closed Limit Switch - Removal and Installation
Figure 401



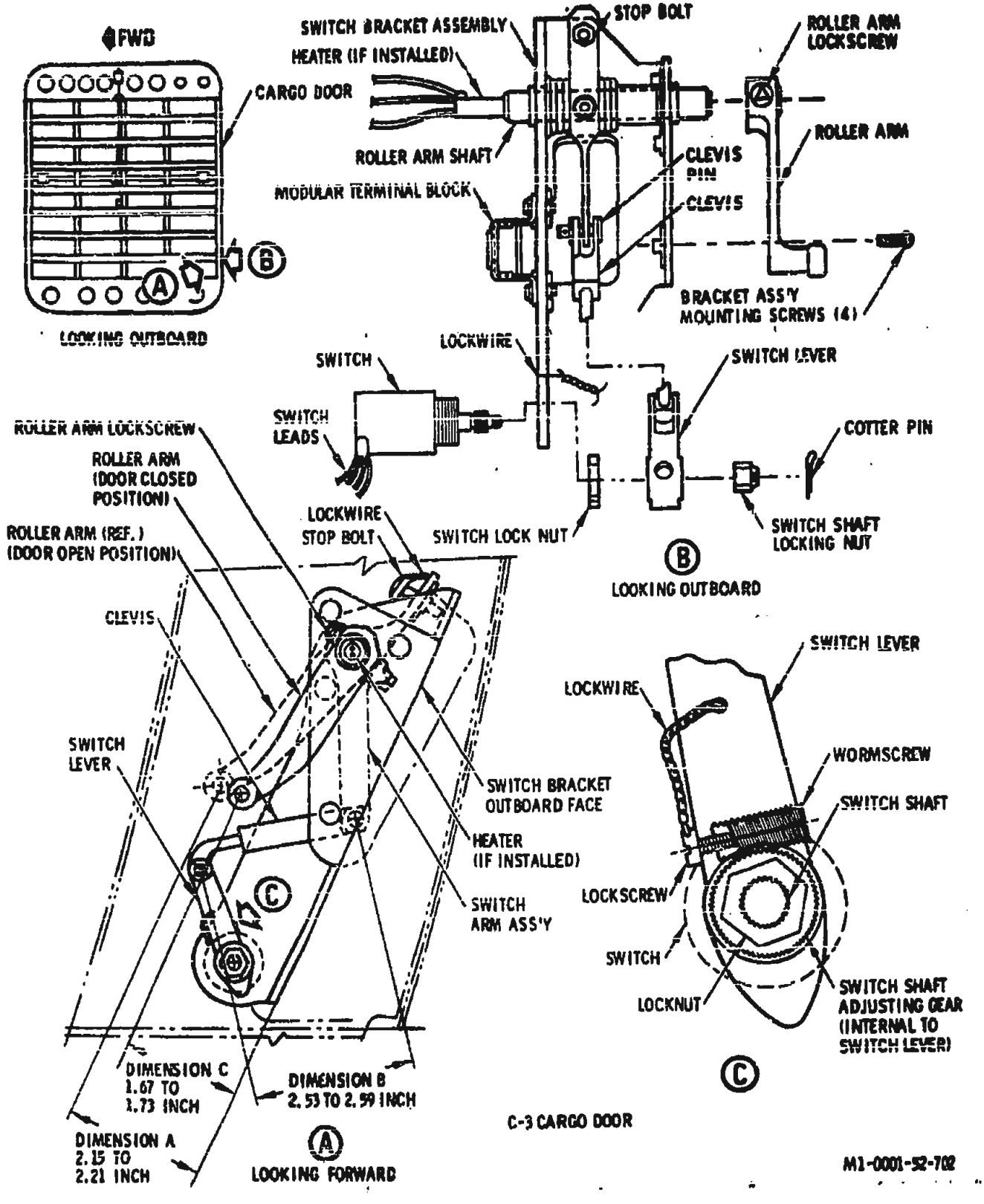
C-1 and C-2 Cargo Door Closed Limit Switch - Removal and Installation
Figure 401 (Sheet 1)



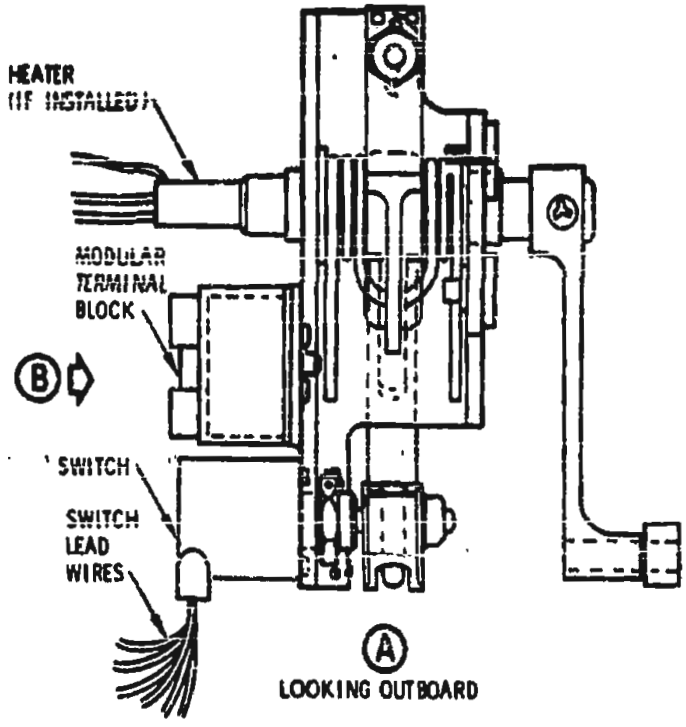
C-1 and C-2 Cargo Door Closed Limit Switch - Removal and Installation
Figure 401 (Sheet 1)

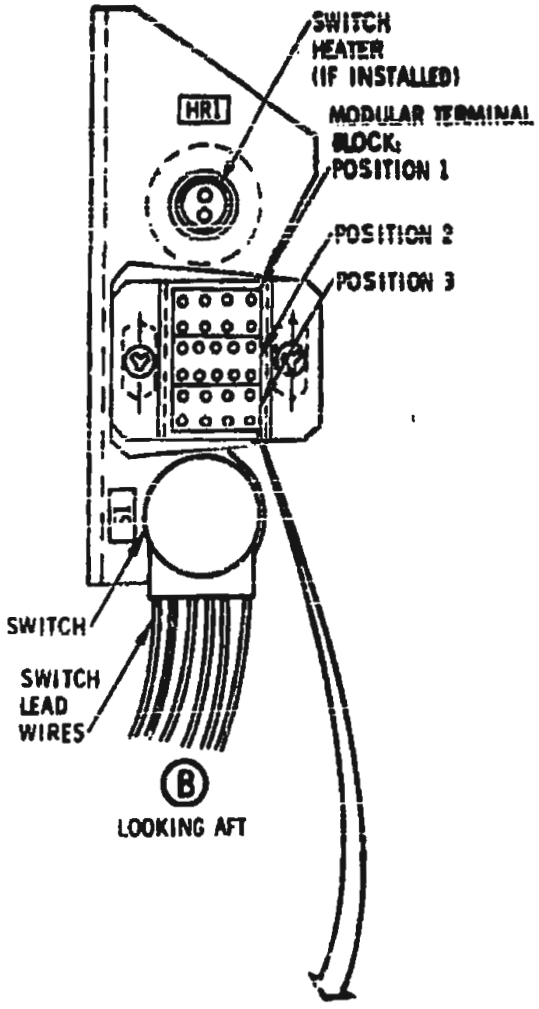


C-3 Cargo Door Closed Limit Switch - Removal and Installation
Figure 401 (Sheet 2)



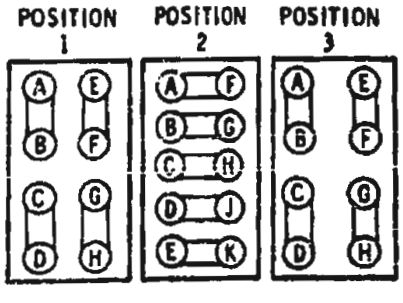
C-3 Cargo Door Closed Limit Switch - Removal and Installation
Figure 401 (Sheet 2)





MODULAR TERMINAL BLOCK
LEAD WIRE NO. VS. PIN SOCKET

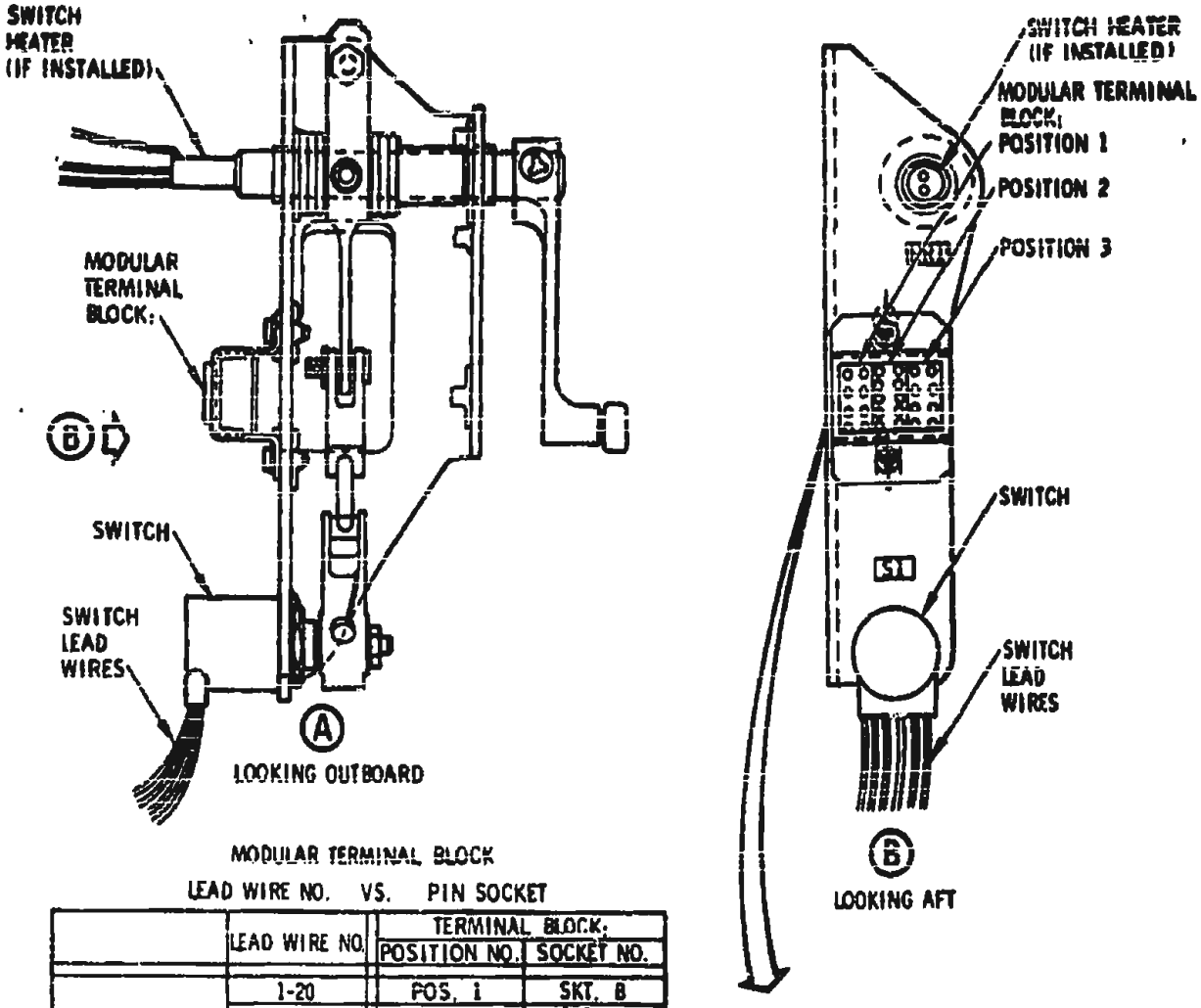
	LEAD WIRE NO		TERMINAL BLOCKS: POSITION NO.	SOCKET NO.
SWITCH LEADS	1-20		POS. 1	SKT. B
	2-20		POS. 1	SKT. D
	3-20		POS. 1	SKT. H
	4-20		POS. 3	SKT. D
	5-20		POS. 3	SKT. H
	6-20		POS. 3	SKT. F
HEATER LEADS (IF INSTALLED)	1-22		POS. 2	SKT. F
	2-22		POS. 2	SKT. H
	GND-22		POS. 2	SKT. K
OTHER:	C1	C2		
3331	-5	-8	POS. 1	SKT. A
3331	-1	-1	POS. 1	SKT. G
5234	-115	-215	POS. 3	SKT. C
5234	-150	-250	POS. 3	SKT. E
5234	-151	-251	POS. 3	SKT. G
OTHER (IF HEATER INSTALLED):	C1	C2		
5234	-165B	-265B	POS. 2	SKT. A
5234	-117L	-217L	POS. 2	SKT. C
5234	-122AC	-222AC	POS. 2	SKT. D
5234	-121K	-221K	POS. 2	SKT. E
5234	-122AD	-222AD	POS. 2	SKT. J



M1-0000-52-142

C-1 and C-2 Cargo Door Closed Limit Switch Modular Terminal Block Wiring
Figure 402 (Sheet 1)

R EFFECTIVITY: 001-031 WITH SB52-127, AND
R 032-036 WITH SB52-159
001B



MODULAR TERMINAL BLOCK

LEAD WIRE NO. VS. PIN SOCKET

	LEAD WIRE NO.	TERMINAL BLOCK: POSITION NO.	SOCKET NO.
SWITCH LEADS	1-20	POS. 1	SKT. B
	2-20	POS. 1	SKT. D
	3-20	POS. 1	SKT. H
	4-20	POS. 3	SKT. D
	5-20	POS. 3	SKT. H
	6-20	POS. 3	SKT. F
HEATER LEADS (IF INSTALLED)	1-22	POS. 2	SKT. F
	2-22	POS. 2	SKT. H
	GND-22	POS. 2	SKT. K
OTHER	3331-10	POS. 1	SKT. A
	3331-1	POS. 1	SKT. G
	5234-315	POS. 3	SKT. C
	5234-350	POS. 3	SKT. E
	5234-351	POS. 3	SKT. G
OTHER (IF HEATER INSTALLED)	5234-365B	POS. 2	SKT. A
	5234-317L	POS. 2	SKT. C
	5234-322AA	POS. 2	SKT. D
	5234-321J	POS. 2	SKT. E
	5234-322AB	POS. 2	SKT. J

M1-0000-52-743

C-3 Cargo Door Closed Limit Switch Modular Terminal Block Wiring
Figure 402 (Sheet 2)

R EFFECTIVITY: 001-031 WITH SB52-127, AND 032-036
R WITH SB52-159
001B

R # CARGO DOOR CLOSED LIMIT SWITCH - ADJUSTMENT AND TEST

R 1. General

R The door closed limit switch is mounted inside the lower aft R corner of each door and is actuated by a switch arm roller which R comes in contact with the aft lower roller guide fitting.

R This switch terminates door closing travel and transitions the R door to the latching mode. DC control power is removed from the R door close power control relay, which in turn removes AC power R from the lift actuator motor.

R The switch also removes power from the cargo compartment lights.

R WARNING: CARE MUST BE EXERCISED WHILE MAINTENANCE IS PERFORMED R ON THE CARGO DOOR WITH ELECTRICAL POWER ON THE DOOR R OPERATING CIRCUIT.

R WHEN WORKMEN ARE STATIONED INSIDE A CLOSED CARGO R COMPARTMENT AN ASSISTANT SHOULD BE STATIONED OUTSIDE R EQUIPPED TO MANUALLY OPEN THE DOOR IF NECESSARY.

R 2. Equipment and Materials

R Cotter Pin - MS24665-151

R 3. Referenced Procedures

R	52-30-01	Preparation for Cargo Door Rigging - Inspection and Check
R	52-31-16	Cargo Door Closed Limit Switch - Removal and Installation
R	52-30-13	Cargo Door Pressure Stop Bolt and Hooks - Adjustment and Test
R	52-30-31	Cargo Door Maintenance Completion - Inspection and Check

R 4. Adjustment/Test

R A. Preparation for Adjustment

(1) Verify that cargo door sill area is clean, free of debris, and pressure seals and retainers are in good condition (Ref. 52-30-01).

(2) Verify cargo door roller guides are clean and door rollers are positioned properly in closed (not latched) position (Ref. 52-30-04).

B. Switch Adjustment

(1) Station workman inside of cargo compartment to perform this procedure.

(2) Install warning placard on door operating controls.

(3) Verify that cargo door is partially open.

(4) On aircraft 001-031, rig the cargo door closed position limit switch as follows (Ref. Fig. 501):

(a) Verify that switch activator stop bolt is adjusted to provide a dimension of 0.64 (±0.03) inch between upper ends of activator and bracket. If not, readjust as necessary.

R

(b) Close door manually the last few inches until aft lower roller is 0.120 (±0.06) inch from the inboard side of lower roller guide.

(c) Turn switch adjusting bolt until switch is activated.

NOTE: Switch actuation point can be determined by pushing outboard on door lower aft corner and listening for switch to actuate.

CAUTION: DOOR OPERATION IS LIMITED TO FOUR COMPLETE OPEN/CLOSE CYCLES WITHOUT PAUSE. AFTER THE FOURTH CYCLE, THE LIFT ACTUATOR SHOULD BE ALLOWED TO COOL FOR TWENTY MINUTES BEFORE REPEATING THE DOOR OPERATION.

(d) Electrically operate door two complete cycles from door closed, latched and locked to full open, and repeat. During door operation, check for interference of pressure stops, ditch stops, hooks, and top edge of door with door surround structure or fittings.

(e) Correct any interference before continuing (Ref. 52-30-13).

(f) When switch operation transitions door to latched position properly, readjust activator stop bolt as required to obtain 0.020 (±0.010) inch gap between switch adjusting bolt and switch plunger when door is clear of fuselage. Lock-wire both adjustment bolts to activator assembly.

(g) Operate door one complete cycle to verify door operation.

(h) If door operation is satisfactory, perform Cargo Door Maintenance Completion Check (Ref. 52-30-31).

CAUTION: DO NOT OPERATE CARGO DOOR CONTROL SWITCH WHILE CHECKING RIG OF CARGO DOOR CLOSED LIMIT SWITCH.

CAUTION: ON GALLEY LEFT CIRCUIT BREAKER PANEL, ZONE 131, OPEN AND TAG APPLICABLE CARGO COMPARTMENT LIGHTING CIRCUIT BREAKER.

(4) On aircraft 032-999,
R rig the cargo door closed position limit switch as follows:

(a) Check that the clearance between the switch arm and the door roller shaft is 0.09 (±0.03) inch (Ref. Fig. 501). If not, adjust backstop screw to meet above requirement. Lock-wire backstop screw.

(b) Close the door manually the last few inches until the aft lower door roller is 0.12 (±0.06) inch from the inboard side of the lower roller guide.

On aircraft 032-036 without SB52-159, switch circuit between terminals 4 and 5 should close at this point.

On aircraft 032-036 with SB52-159 and 037-999, circuit between switch lead wires 4-20 and 5-20 (at modular terminal block) should close at this point.

If not, adjust clevis as follows:

• Remove cotter pin, washer, and pin attaching clevis to arm.

• Turn clevis C.W. or C.C.W. on switch lever as required to obtain proper position.

• Install pin, washer, and cotter pin.

(c) If clevis required adjustment, recheck adjustment per Step B4(b) above.

NOTE: The switch actuation point can be determined by pushing inboard or outboard on the door lower aft corner and listening for switch actuation and then checking dimension in Step 4B(4)(b).

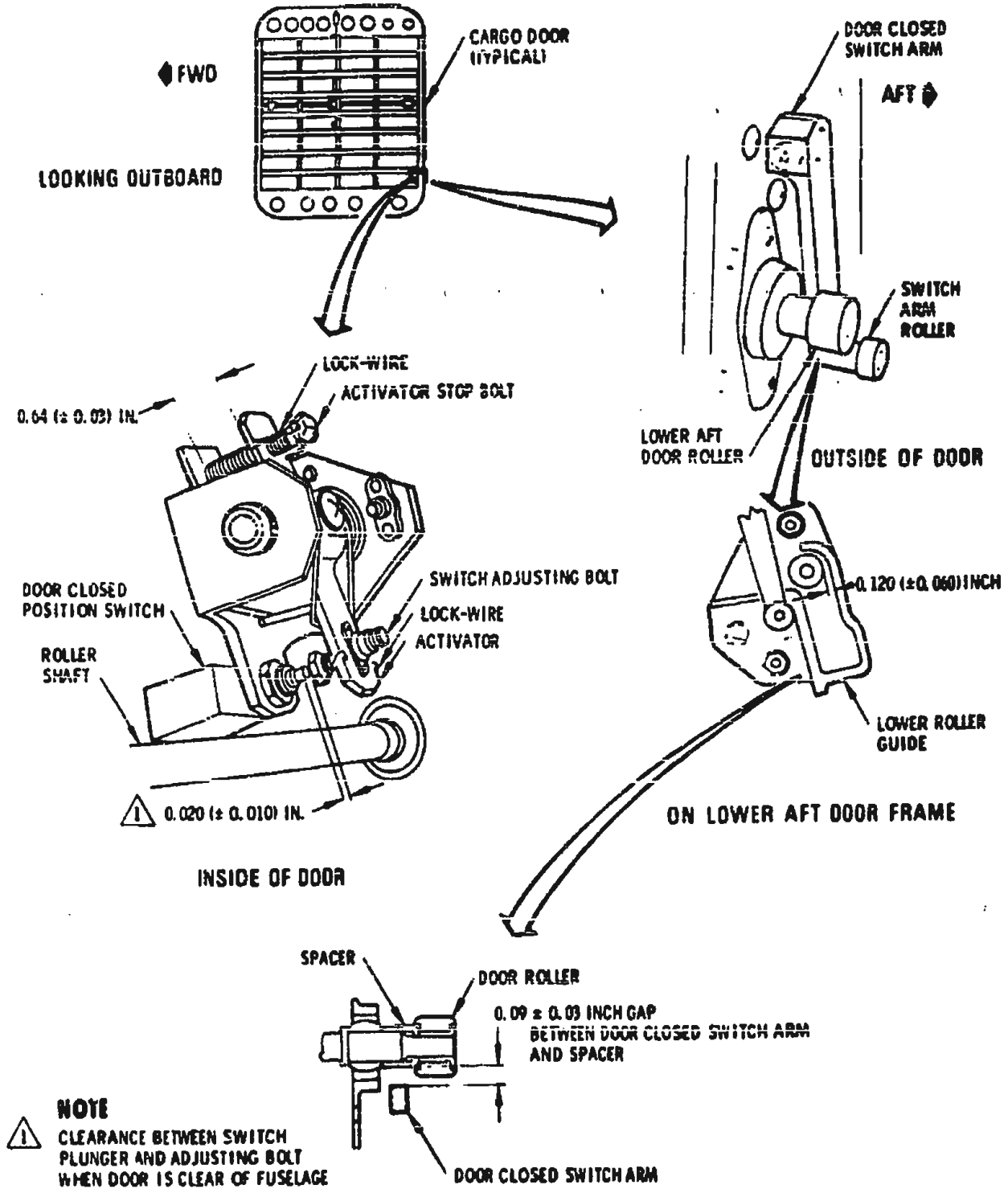
CAUTION: DOOR OPERATION IS LIMITED TO FOUR COMPLETE OPEN/CLOSE CYCLES WITHOUT PAUSE. AFTER THE FOURTH CYCLE, THE LIFT ACTUATOR SHOULD BE ALLOWED TO COOL FOR TWENTY MINUTES BEFORE REPEATING THE DOOR OPERATION.

(5) Electrically operate door two complete cycles from door closed, latched, and locked position to full open, and repeat. During door operation, check for interference of pressure stops, ditch stops, hooks, and top edge of door with door surround structure or fittings.

(6) Correct any interference before continuing (Ref. 52-30-13).

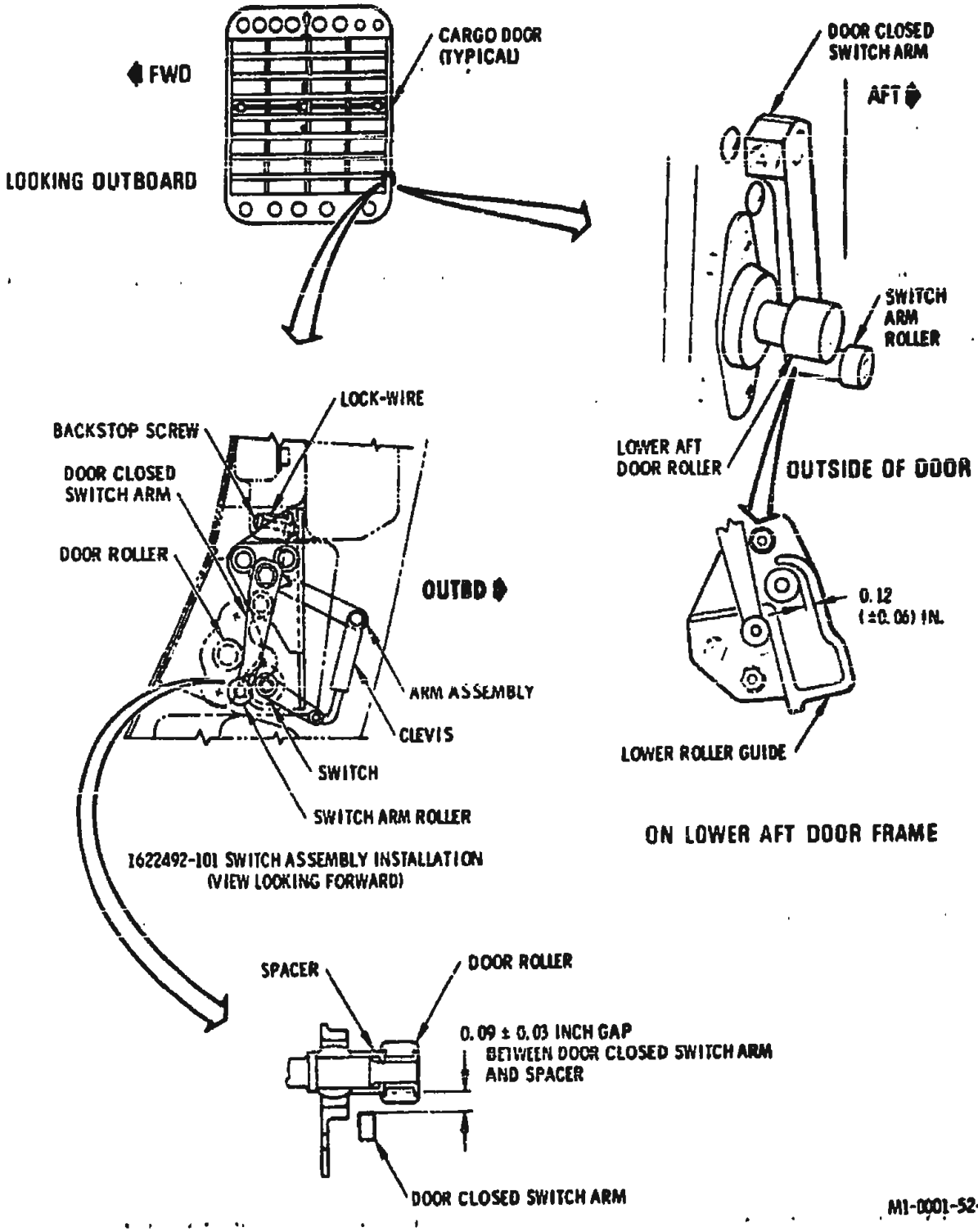
(7) If door operation is satisfactory, perform Cargo Door Maintenance Completion Check (Ref. 52-30-31).

R (8) Remove tag and close the cargo compartment light circuit breaker opened in CAUTION preceding Step 4B(4).



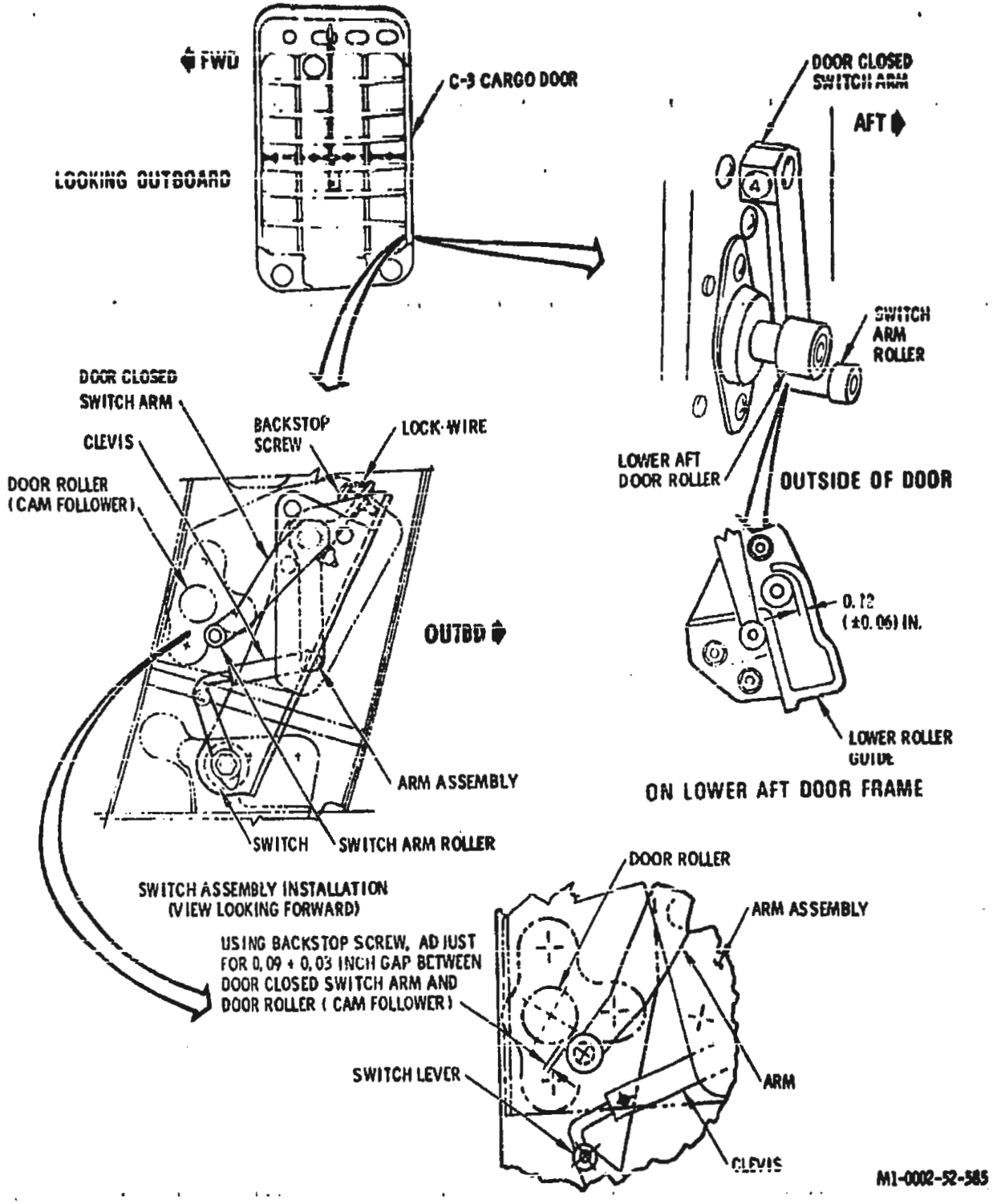
R R Cargo Door Closed Position Limit Switch
Figure 501

R R EFFECTIVITY: 001-031



R R C-1, C-2 Cargo Door Closed Position Limit Switch
Figure 501 (Sheet 1)

R R EFFECTIVITY: 032-999



R C-3 Cargo Door Closed Position Limit Switch
R Figure 501 (Sheet 2)

EFFECTIVITY: 032-999

001B

DOOR UNLOCK HANDLE REMOVAL AND INSTALLATION

1. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Grease MIL-G-23827

Cotter pins MS24665-153

Packing O-ring MS28775-012

Rivet LS10795M6-19

R 2. Referenced Procedures

R 52-30-28 Cargo Door Unlock Switch - Adjustment and Test

52-34-00 Cargo Door Actuation System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Open Cargo door (hanging vertical).

(2) Gain access to inboard side of handle (Ref. Fig. 401, 402, and 403).

(3) Remove nut, washers, and bolt that fasten the arm to the shaft.

(4) Pull the handle (with shaft) outboard from door.

NOTE: Washers (three maximum) are located outboard of the arm on the shaft. These should be retained for reinstallation as the handle is removed.

B. Installation

(1) Gain access to inboard side of lock actuator opening control handle mechanism.

(2) If new handle must be installed on shaft proceed as follows:

(a) Drill head from rivet in handle.

(b) Punch out rivet shank.

(c) Align new handle holes with hole in shaft and install rivet.

(d) Drive rivet as required to double flush rivet.

(e) Remove any projecting edges of rivet.

(3) Install packing O-ring on shaft.

(4) Lubricate shaft bearing area with grease MIL-G-23827.

(5) Insert shaft through handle support fitting far enough to install washers, then slide arm onto the handle shaft.

(6) Align arm on shaft, install through bolt with washer and check shaft end play. If too tight remove a washer. If too loose add a washer (3 maximum).

NOTE: Shaft should fit free with minimum end play.

(7) When shaft is properly fitted, complete installation of through bolt with second washer and nut.

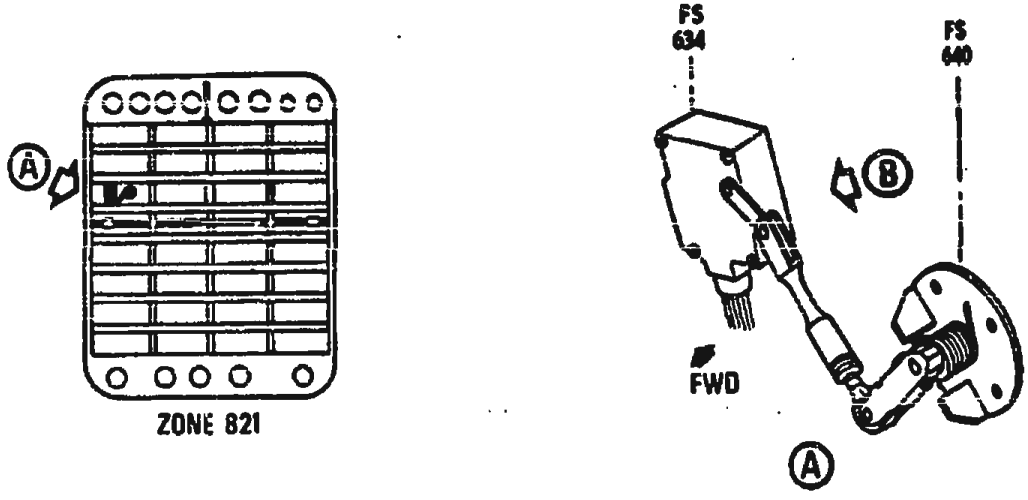
(8) Pressure lube shaft with grease MIL-G-23827 through lube fitting.

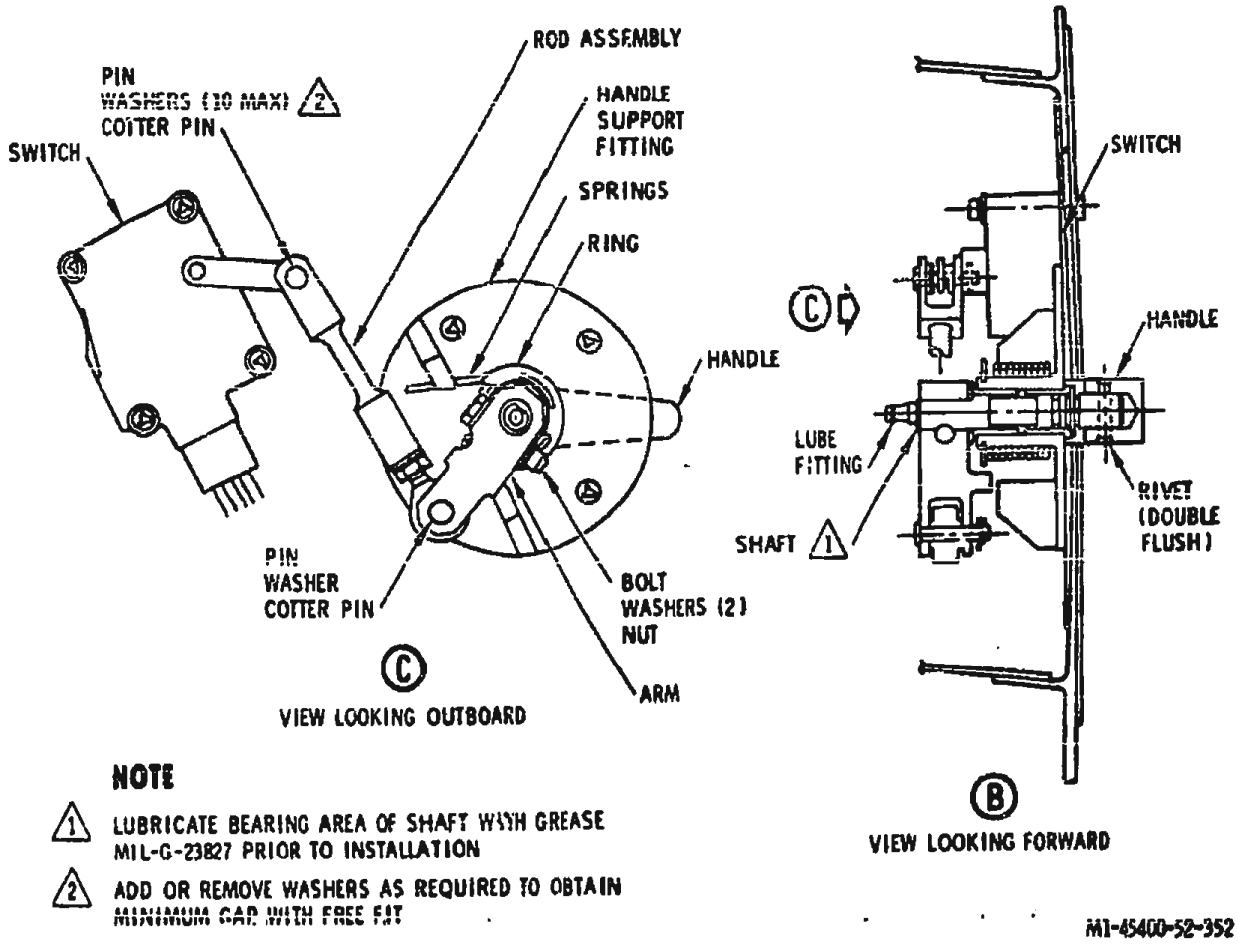
R R (9) Verify operation of unlocking switch (Ref. 52-30-28,501).

R (10) Operate cargo door to open.

R (11) Install cargo door inner liner, if removed for access.

R (12) Close cargo door.



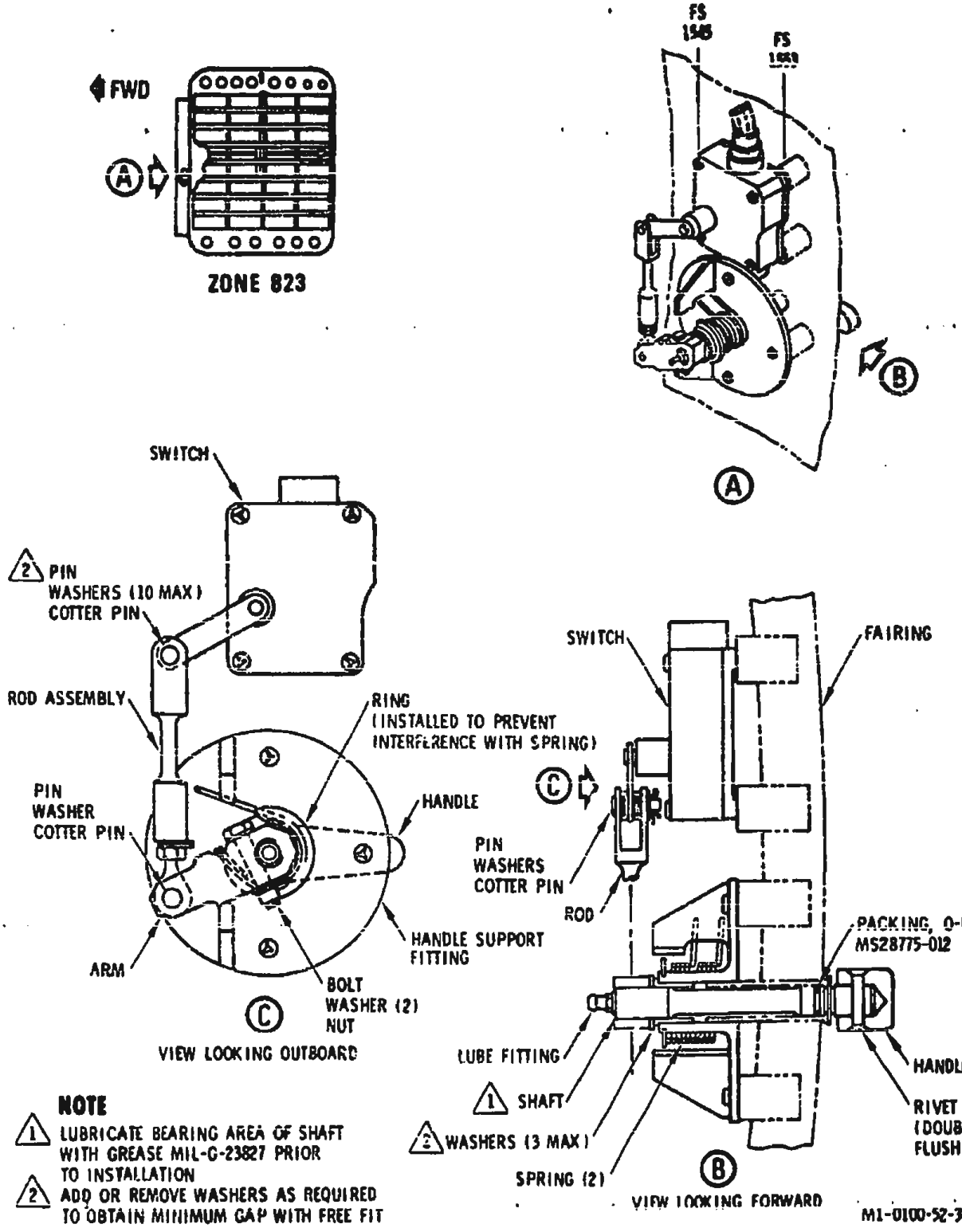


NOTE

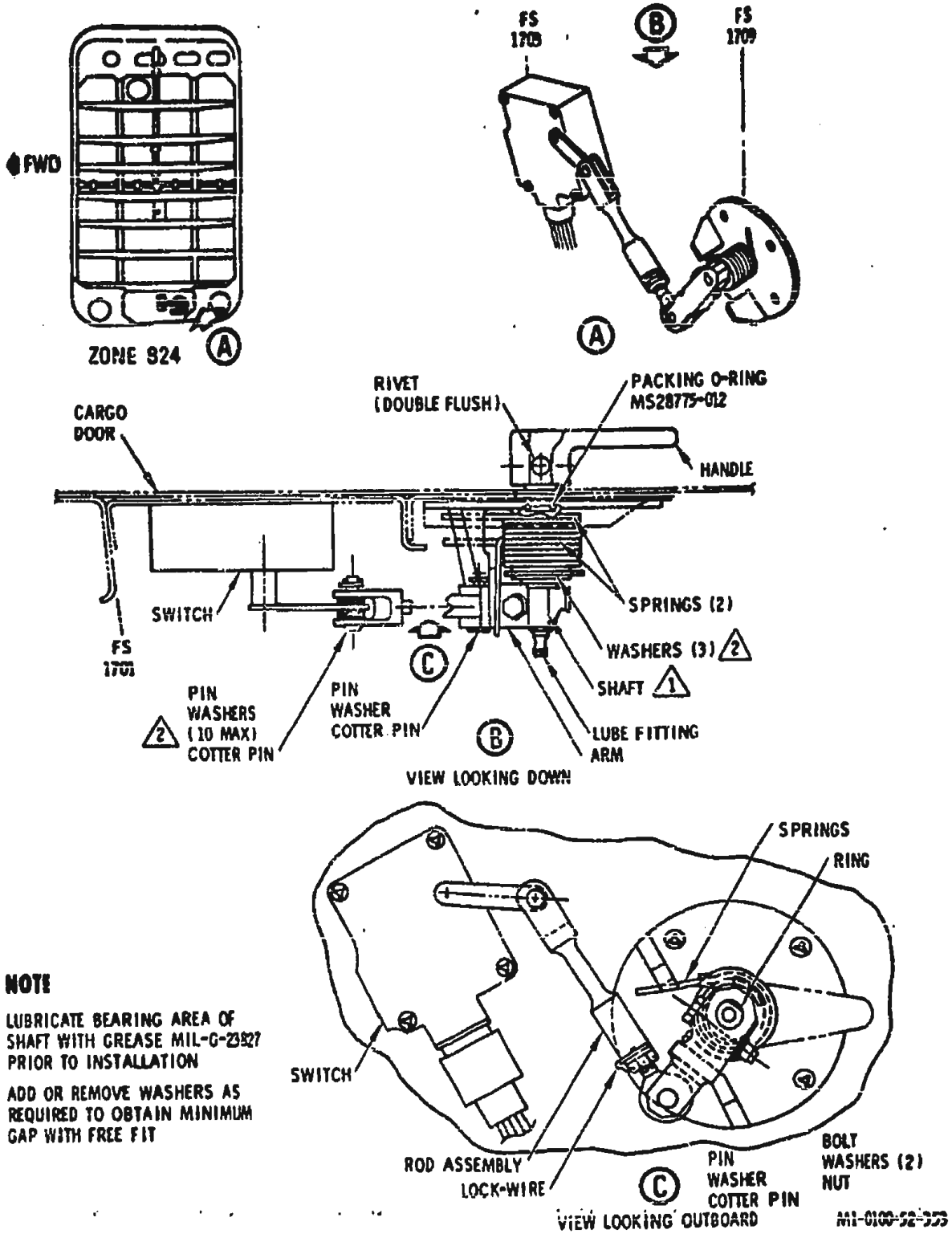
1. LUBRICATE BEARING AREA OF SHAFT WITH GREASE MIL-G-23827 PRIOR TO INSTALLATION
2. ADD OR REMOVE WASHERS AS REQUIRED TO OBTAIN MINIMUM GAP WITH FREE FIT

M1-45400-52-352

Door Unlock Handle (C-1 door) - Removal and Installation
Figure 401



Door Unlock Handle (C-2 door) - Removal and Installation
Figure 402



NOTE

1. LUBRICATE BEARING AREA OF SHAFT WITH GREASE MIL-G-23827 PRIOR TO INSTALLATION
2. ADD OR REMOVE WASHERS AS REQUIRED TO OBTAIN MINIMUM GAP WITH FREE FIT

Door Unlock Handle (C-3 door) - Removal and Installation
Figure 403

SAFETY STOP PUSH ROD CONTROL - REMOVAL AND INSTALLATION

1. General

The safety stop push rod control (Ref. Fig. 401) is located on inboard side of cargo door between lock actuator and safety stop assembly at top of door.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, Temp A, 0.020-inch diameter, or equivalent

Rig pin, 0.312-inch diameter steel rod

Grease, MIL-G-23827

Sealing compound, LCM 40-2121 (Products Research Corp., PR 1431G, Type I), or equivalent

3. Referenced Procedures

24-41-00	External Power/Ground Service System - Description and Operation
52-30-22	Proximity Sensor - Adjustment and Test
52-31-01	Aft Cargo Compartment Door - Adjustment and Test
52-31-03	Linear Door Lock Actuator - Removal and Installation
52-31-07	Door Liner - Removal and Installation
52-34-00	Cargo Door Actuation System - Adjustment and Test

4. Removal/Installation

WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

A. Removal (Ref. Fig. 401)

(1) Gain access to inboard side of cargo by opening cargo door with electrical power (Ref. 52-34-00).

(2) Electrically or manually actuate door lock actuator to locked (retracted) position.

(3) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

WARNING: THE SAFETY STOP IS SPRING LOADED TO BOTH LOCK AND UNLOCK POSITION. USE CAUTION WHEN MANUALLY POSITIONING SAFETY STOP OR SAFETY STOP ACTUATION PUSH ROD WITH ACTUATION SYSTEM DISCONNECTED.

(4) Peel up lower edge of upper insulation blanket for access to actuator.

(5) Disconnect push rod from latch actuator idler crank assembly.

(6) Disconnect push rod from safety stop. Remove push rod by sliding push rod downward between shield and door.

NOTE: Depending on the cargo door, push rod attachment to safety stop may include several bushings, spacers, springs and washers. Note position and location of attaching components to aid in installation.

B. Installation (Ref. Fig. 401)

(1) Verify that circuit breakers opened in Step 4A(3) are opened and tagged. Verify that door control is tagged.

(2) Butter-lube all wear surfaces with grease MIL-G-23827. Connect push rod to safety stop. Verify that correct bushings, spacers, and washers are installed (Ref. Fig. 401). Tighten nut.

(3) Check for free movement of safety stop as follows:

WARNING: THE SAFETY STOP IS SPRING LOADED TO BOTH LOCK AND UNLOCK POSITIONS. USE CAUTION WHEN MANUALLY POSITIONING SAFETY STOP PUSH ROD.

(a) Grasp push rod and operate safety stop through full lock to unlock positions. Verify that safety stop operates freely.

(b) Operate push rod to position safety stop towards lock position. Verify that springs move safety stop to full locked position.

(c) Operate push rod to position safety stop towards unlock position. Verify that when safety stop is almost to unlock position, springs snap safety stop to full unlock position.

(d) If safety stop does not move freely through full range of travel, lubricate all pivot components with light general purpose oil. Recheck mechanism for free movement.

NOTE: Safety stop action must be free; if it is not, correct condition before continuing.

(4) Tie safety stop in unlock position with lock-wire. (This is required to permit door closure without interference with structure or striker fitting.)

(5) Remove tags and close circuit breakers opened in Step 4A(3).

(6) Close door electrically to latched and locked position.

(7) Prepare for control adjustment as follows:

(a) Tag door electrical and manual controls.

(b) Using lock actuator knob, manually actuate actuator to fully retracted position.

(c) Insert rig pin into lever locking latch rig pin hole.

CAUTION: LOCK ACTUATOR KNOB MUST NOT BE TURNED TO AID INSERTION OF RIG PIN.

NOTE: If rig pin cannot be installed, verify that lock actuator is properly installed (Ref. 52-31-03).

(8) Remove lock-wire that held safety stop in unlock position. Carefull, position push rod to allow safety stop to position to fully locked position.

(9) Move safety stop away from full locked position and insert a 0.030 inch feeler gage between safety stop/bellcrank and safety stop support bracket. Allow safety stop to position against feeler gage. Position safety stop so that safety stop indicator lower edge appears within aperture lower slot when viewed through viewport (Ref. Fig. 401).

(10) With lock actuator in retracted rig position and safety stop in fully locked rig position, adjust push rod to fit. Install bolt, washer and nut connecting push rod to latch actuator crank assembly. Install cotter pin.

(11) Remove rig pin from lever locking latch.

(12) Remove feeler gage from between safety stop/bellcrank and safety stop support bracket.

(13) Remove tags from door electrical and manual controls.

(14) Operate door to electrically extend and retract lock actuator. Verify gap of 0.020 to 0.040-inch between safety stop/bellcrank and safety stop support bracket, or on C-3 door, the support bracket stop bolt. (On aircraft with direct view system, verify that safety stop indicator lower edge appears within aperture lower slot when viewed through viewport.)

(15) With safety stop in fully locked position, gap between safety stop and its respective cargo door safety stop striker should be 0.100 to 0.150 inch. If not, correct as described in 52-30-19, Adjustment and Test, PARA 4.B.

(16) Check gap between proximity switch and target (at safety stop). Gap must be 0.06 (+0.040, -0.050) inch. If proximity switch requires adjustment, refer to 52-30-22, Adjustment and Test.

(17) On aircraft without Direct View System, operate door and check for proper operation of lock actuator, safety stop, and cargo door caution and advisory lights (Ref. 52-30-19, Adjustment and Test, Para. 4.D.

(17) On aircraft with Direct View System, verify operation of safety stop/proximity sensing system as follows:

(a) Prepare door for electrical operation (52-34-00, Para. 4A).

(b) Manually turn lock actuator knob in extend (unlocking) direction approximately three turns. Verify that appropriate light on FE/SO annunciator panel comes on.

(c) Slowly turn manual knob on lock actuator in retract (locking) direction until appropriate light goes off. Verify that LOCK ACTUATOR

INDICATING (green) LIGHT on door is off. If not, adjust proximity switch closer to target and repeat Steps (b) and (c).

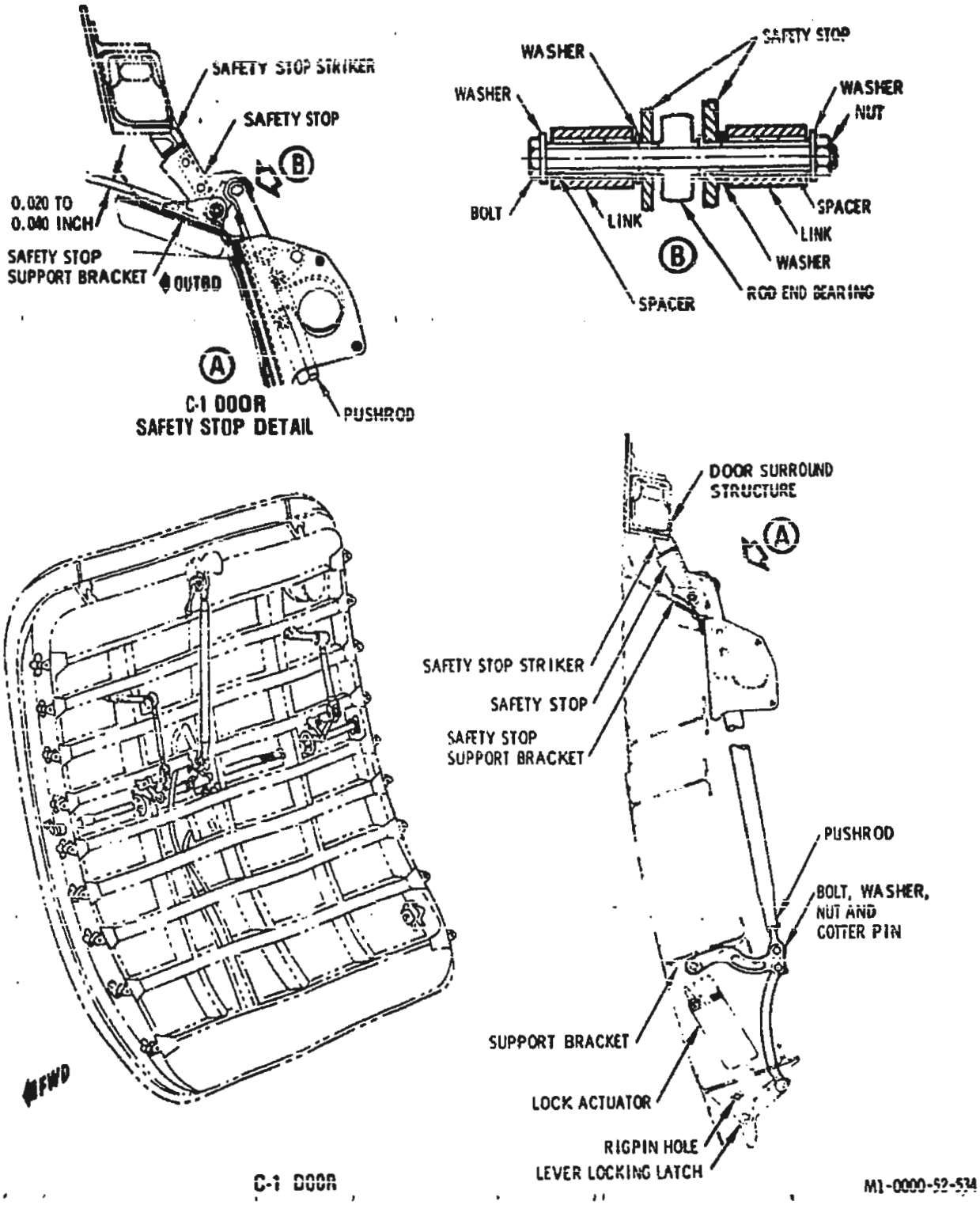
(d) Continue driving lock actuator manually until green light comes on.

(e) Slowly turn lock actuator knob in extend (unlocking) direction.

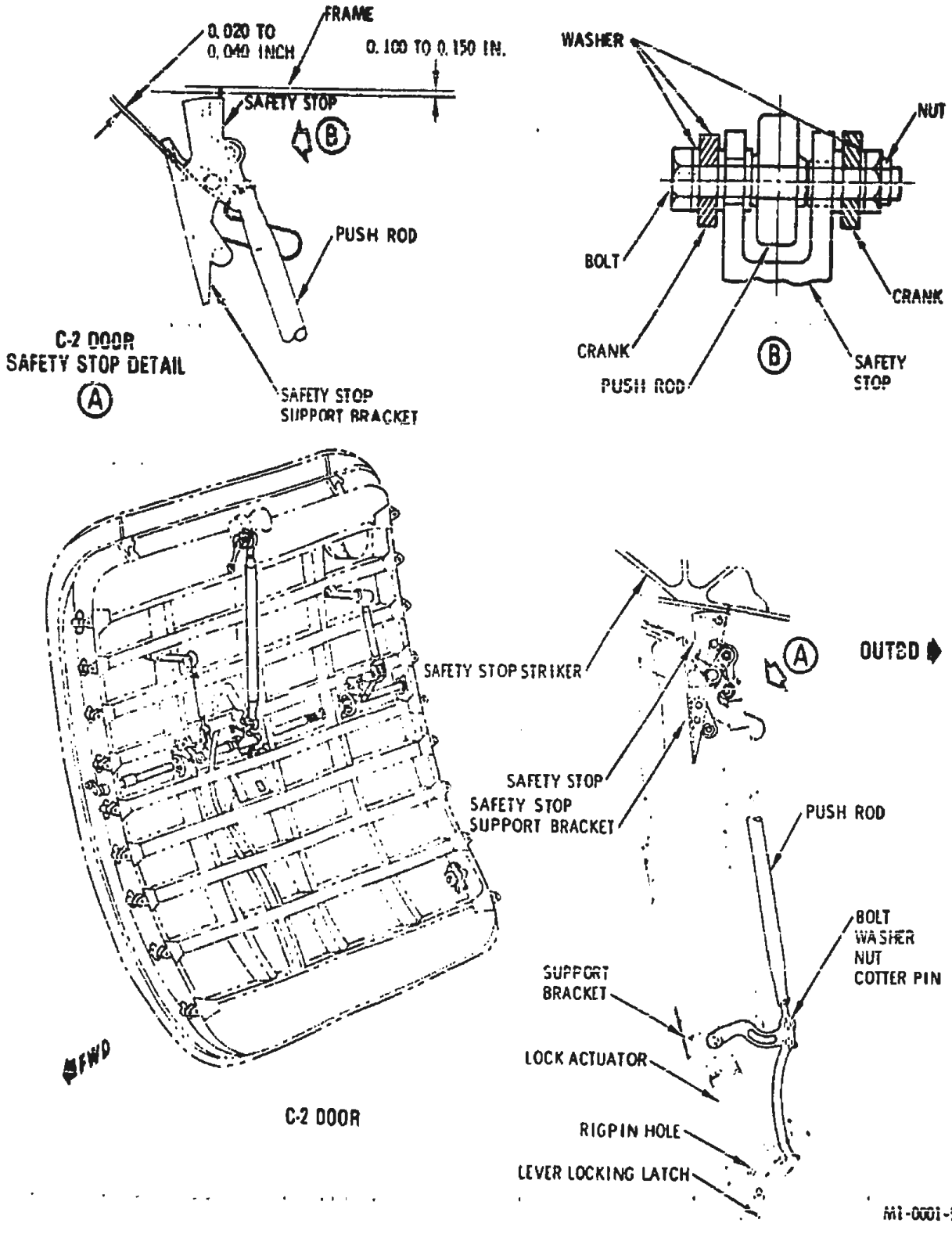
(f) Check that the appropriate light on FE/SO annunciator panel comes on and LOCK ACTUATOR INDICATING (green) LIGHT goes off before lower edge of safety stop indicator leaves top of triangular aperture in aperture bracket when viewed through viewport.

(18) Fasten insulation blanket.

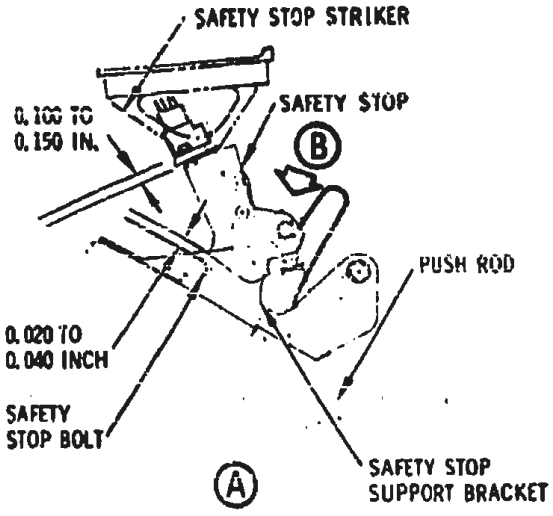
(19) Lock door and turn off electrical power (Ref. 24-41-00).

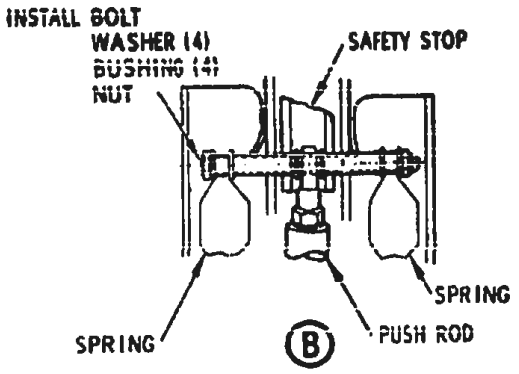


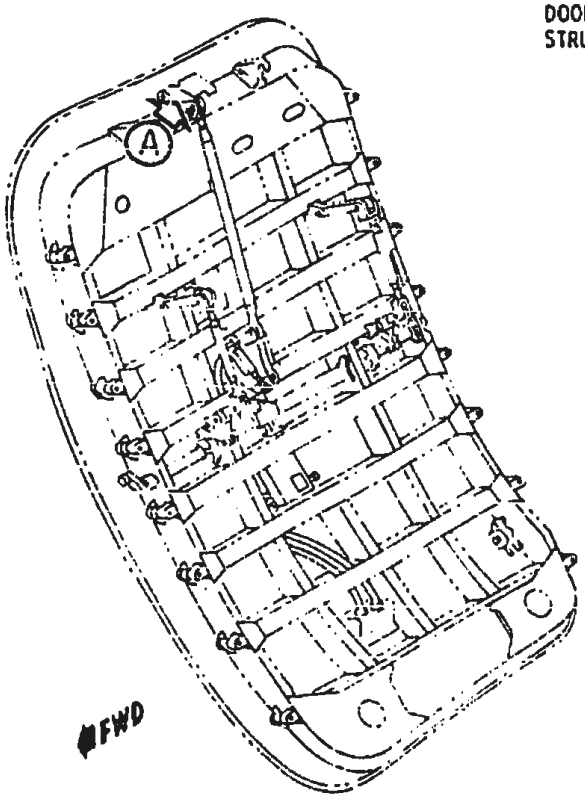
Safety Stop Push Rod - Removal and Installation
Figure 401



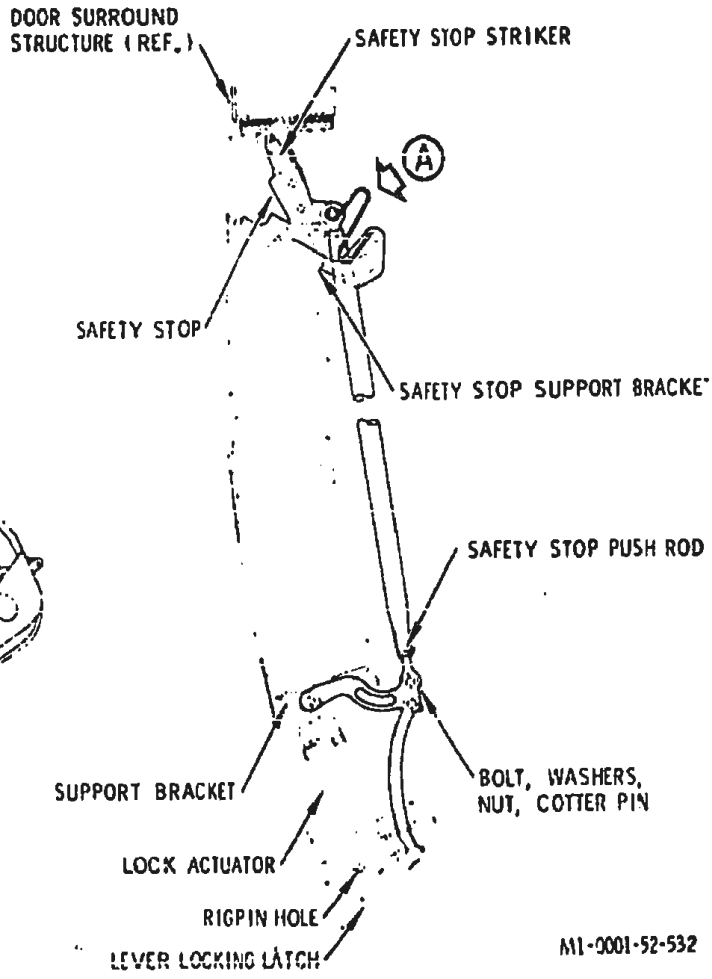
Safety Stop Push Rod - Removal and Installation
Figure 402







C-3 DOOR



Safety Stop Push Rod - Removal and Installation
Figure 403

CARGO DOOR ACTUATION SYSTEM - DESCRIPTION AND OPERATION

1. General

The cargo door actuation system consists of electrical and mechanical components to open and close each door. Each system includes:

A lift actuator

A linear door lock actuator

A latch actuator

Two door control switches (one inside each cargo compartment and one outside each cargo door).

A door-closed limit switch

A LOCK ACTUATOR INDICATING LIGHT

A lock actuator control relay

A door latch control relay

A door unlatch control relay

A door actuation power control relay

A door actuation air/ground sensing relay

A cargo door nose landing gear air/ground sensing relay

The lift actuator and the cargo door inside control switches are mounted in the area above the cargo door. The door control switch is mounted on a panel above the door sill and provides for door opening operation only.

The lock actuator, the LOCK ACTUATOR INDICATING LIGHT, the latch actuator, and the door-closed limit switch are installed on each door.

The external door control switches for the forward and center cargo doors are installed in switch boxes in the right side of each compartment, forward of the door. The aft cargo door external control switches are installed in switch boxes below the door in zone 166.

On aircraft 002-031 without SB 52-060, the external door control switches are actuated by hinged,

paddle type switchbox covers. The covers are marked PUSH-TO-OPEN and PUSH-TO-CLOSE.

On aircraft 001-023 with SB 52-056, and 024-999, a one-half inch hole is provided in each cover to enable a screwdriver or similar tool to be used to close any covers which bind in the partially open position.

On aircraft 002-031 with SB 52-060, and 032-999, the cargo door switchbox cover must be pushed inboard for access to the actuation switch.

The lock actuator opening control handle on the cargo door must be moved to the UNLOCK position and held for approximately 10 seconds to unlock the door prior to opening the door.

The lock actuator control relay, the door latch control relay, and the door unlatch control relay are installed in relay panels above each cargo compartment door.

The cargo door nose landing gear air/ground sensing relay, the door actuation power control relay, and the door actuation air/ground sensing relay for the three cargo doors are installed in the mid-electrical service center, zone 137.

A. Torque Limiting Right-angle Drive Gearbox

The right-angle drive gearbox is a manually operated right-angle drive used as an alternate source of power to operate the cargo doors.

Operation is accomplished by manually driving the input shaft with a 1/2-inch square drive speed handle.

The gearbox has an overload device which is set to accept a 57- to 63-pound-inch torque at 45 to 50 RPM, and to slip at 75 to 85 pound-inches torque.

2. Operation

All cargo doors may be operated electrically from either inside the cargo compartment or from outside the aircraft when the nose landing gear air/ground sensing relay and the air/ground sensing relay No. 5 are energized (Ref. 52-34-00, Fault Isolation, SCHEM 1, SCHEM 2 and SCHEM 3).

NOTE: Electrical cargo door operation from inside the cargo compartment is limited to opening only.

The air/ground sensing relay No. 9 provides power to energize the cargo door nose landing gear air/ground sensing relay. This

action completes the DC circuits to the door control switches and the speed control limit switch in the geared lift actuator.

Air/ground sensing relay No. 5 provides power to energize the cargo door air/ground sensing relay. Closing of the cargo door air/ground sensing relay energizes the cargo door actuation power control relay. The power control relay completes the 115V AC circuit to the geared lift actuator and the door latch and unlatch control relays.

The LOCK ACTUATOR INDICATING LIGHT is operated by a limit switch on the lock actuator and is on whenever the actuator is in the lock position. The light is to inform the cargo door operator when the lock actuator is in the lock position and the control switch may be released.

A. Door Opening - Normal Electrical Operation

When the lock actuator opening control handle on the cargo door is moved to the UNLOCK position and held for
R approximately 10 seconds, the LOCK ACTUATOR indicating light
R goes off as the lock actuator comes on to unlock the door.

R After the door is unlocked, move the outside cargo door
R actuation switch to the open position and hold for approximately 20 seconds to unlatch and open the door.

The following actions occur:

(1) The door unlatch control relay actuates.

(2) The latch actuator motor unlatches the door.

(3) The lift actuator is energized.

When power is applied to the lift actuator, the energized open door power control relay completes the 115V AC, three-phase power circuit through the high-speed control relay contacts to the delta windings of the motor, and also energizes the brake coil to retract the brake shoe. The delta windings enable slow rotation at high torque to overcome the inertia of the initial door movement. As the door moves up, limit switch S8 closes to energize the solenoids of both high-speed control relays to transfer the 115V AC power to the wye windings of the motor to increase the rotor speed.

As the door moves to the top of its travel, limit switch S7 opens to deenergize the open door power control relay, the motor, and brake power. When brake power is removed, the spring-loaded brake shoe engages and stops the door travel. The torque limit switches in the lift actuator shut off

power to the motor if a high torque overload resists the movement in either direction.

R On aircraft 002-031 with SB52-135, and 032-999, overcenter springs on the actuation switchbox door hold the door fully open during switch actuation. It is therefore necessary, following door cycling to manually return switchbox door to closed-flush position and to verify that overcenter springs have snapped back to a position bearing outward on the switchbox door. This ensures that actuator uplock will be engaged.

CAUTION: DOOR OPERATION IS LIMITED TO FOUR COMPLETE OPEN/CLOSE CYCLES WITHOUT PAUSE. AFTER THE FOURTH SUCH CYCLE, THE LIFT ACTUATOR SHOULD BE ALLOWED TO COOL FOR TWENTY MINUTES BEFORE RECYCLING THE DOOR.

B. Door Closing - Normal Electrical Operation (aircraft 002-031, without SB52-135)

When the outside cargo door actuation switch is held in the close door position for approximately 30 seconds, the following actions occur:

(1) The close-door power control relay in the lift actuator is energized.

(2) The lift actuator drives to close the door.

(3) As the cargo door reaches closed position, the door-closed limit switch opens.

(4) The door latch control relay is energized. The relay transposes phases A and B of the 115V AC power from the lift actuator motor to the latch actuator motor.

(5) The latch actuator motor latches the cargo door and then its internal limit switch transfers power to the lock actuator control relay.

(6) The lock actuator control relay energizes.

(7) The lock actuator motor drives in the reverse direction to lock the door and turn on the LOCK ACTUATOR INDICATING LIGHT.

B. Door Closing - Normal Electrical Operation (aircraft 002-031 with SB52-135 and 032-999)

When the outside actuation switch box door is pushed open, it compresses a torsion spring. The spring moves a linkage arm which actuates a push-pull cable to release a ratcheting

uplock pawl in the lift actuator. An overcenter spring assembly holds the switch box door open for access to the door operation switch.

Under normal operation, the uplock pawl is released when the door operation switch is held in the close door position. The release of the uplock pawl activates a position switch which feeds power to the close-door relay of the lift actuator. The lift actuator then drives the door down.

In the event that the uplock pawl is engaged and jammed, the flapper door would be prevented from operating and not allow access to the door control switch. The flapper door torsion spring allows the flapper door to be opened, giving access to the switch. When the door control switch is moved to the close door position, the uplock pawl position switch will direct power to the open-door relay which will power the door in the open direction, thus relieving the uplock pawl jam. The torsion spring force created by the flapper door will now be able to release the uplock pawl. The uplock pawl position switch will sense the uplock pawl release and direct power to the close-door relay and power the cargo door down.

As the door approaches the bottom of its travel the following actions occur:

(1) The door closed limit switch opens.

(2) The door latch control relay is energized. The relay transposes phases A and B of the 115V ac power to the latch actuator motor.

(3) The latch actuator motor latches the cargo door and provides power to the lock actuator control relay.

(4) The lock actuator control relay energizes.

(5) The lock actuator motor drives in the reverse direction to lock the door and turn on the lock actuator indicating light.

C. Door Opening - Manual Operation

The cargo doors can be manually cranked open as follows:

(1) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(2) Gain access to lock actuator control knob and manually turn knob to unlock door.

(3) Manually crank latch actuator to unlatch door.

(4) Gain access to right-angle drive gearbox and manually crank door open.

From inside the cargo compartment, the doors can be unlocked and unlatched by gaining access to the lock and latch actuators and manually rotating knobs to unlock and unlatch door. This will open the door slightly and allow air to circulate into the compartment. The outside of the door will be extended out of fuselage contour.

D. Door Closing - Manual Operation

The cargo doors can be manually cranked closed as follows:

(1) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(2) Prop open the actuation switchbox door.

(3) Gain access to right-angle drive gearbox and manually crank door closed.

(4) Manually crank latch actuator to latch door.

(5) Gain access to lock actuator control knob and manually turn knob to lock door.

CARGO DOOR ACTUATION SYSTEM - FAULT ISOLATION

1. General

The diagrams and schematics in this section can be used for fault isolation any time a fault is reported or suspected. The PREREQUISITES listed at the top of each fault isolation diagram must be satisfied prior to starting fault isolation. Uncommon abbreviations are defined on the using fault code diagram or schematic.

If the flight crew reports a trouble using a fault code number, the code number can be found in the Fault Isolation Reference Table in the Chapter 52 Fault Code Index. The index specifies the exact maintenance manual section, fault isolation diagram, and block number on the diagram where the fault isolation procedure should start. Schematics are included at the end of the section to supplement the fault code diagrams or as an aid in isolating a problem not covered on the diagrams.

Refer to the Maintenance Manual Introduction for a more detailed discussion of the Fault Isolation Reporting Method (FIRM) and use of fault isolation diagrams/schematics.

2. Fault Isolation/Identification

Table 101 lists the fault isolation diagrams and schematics in this section.

Table 101

	101	Component Location Index
	102	Component Locator Diagram
	103	Cargo Door Will Not Unlock Electrically
	104	Cargo Door Will Not Unlatch Electrically
R	105	Cargo Door Will Not Open Electrically
	106	Cargo Door Will Not Close Electrically
	107	Cargo Door Will Not Latch Electrically
	108	Cargo Door Will Not Lock Electrically

Table 101 (Cont)

101	Component Location Index
109	Lock Actuator (green) Indicating Light On With Door Not Locked (Door Warning Light On)
110	Lock Actuator (green) Indicating Light Out With Door Latched (Door Warning Light Out)
SCHEM 1	Forward Cargo Door (C-1) Electrical Schematic
SCHEM 2	Center Cargo Door (C-2) Electrical Schematic
SCHEM 3	Aft Cargo Door (C-3) Electrical Schematic

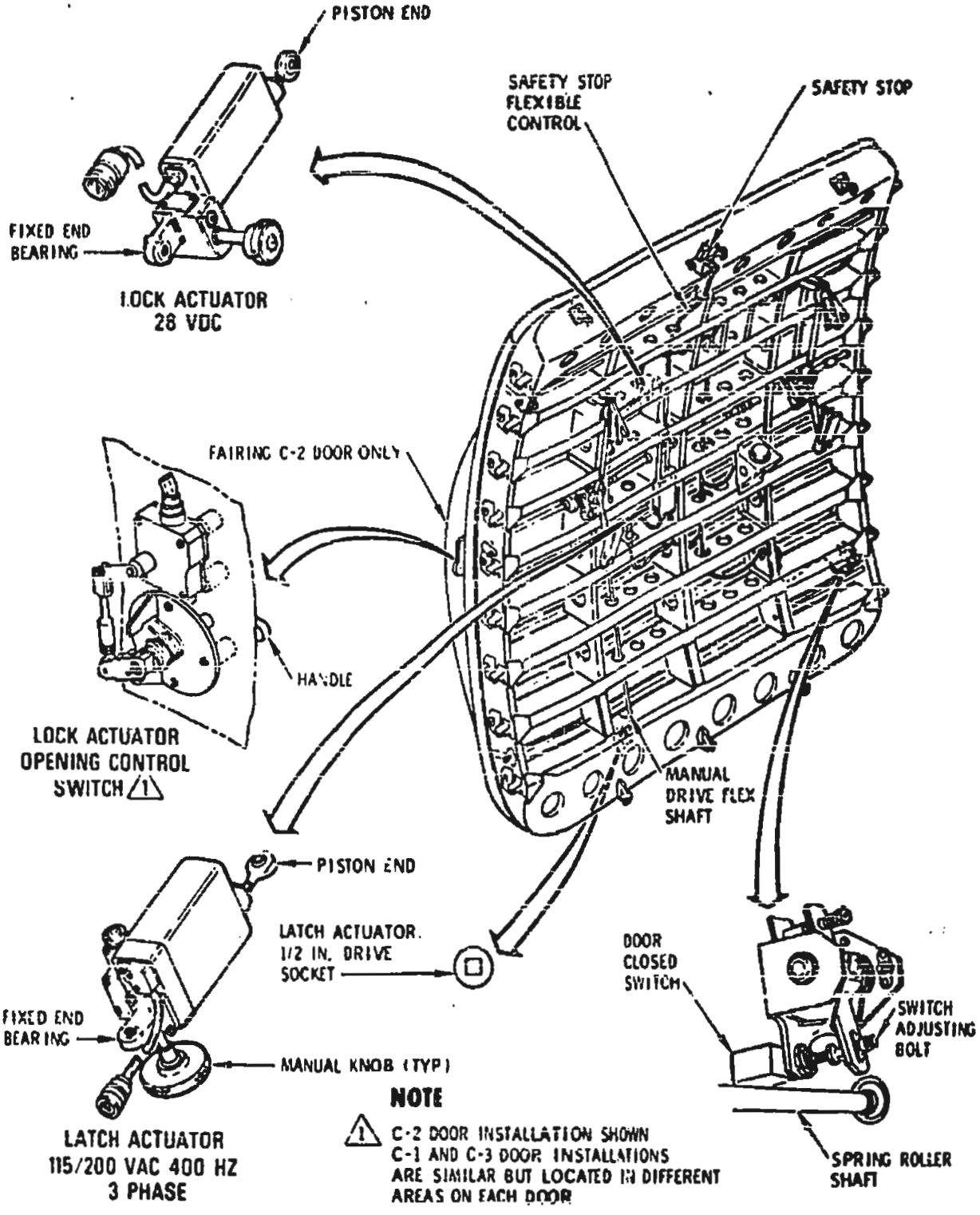
COMPONENT	QTY	AREA/ACCESS	REFERENCE
C-1, C-2, C-3 DOORS			
ACTUATOR, LATCHING	3	DOOR STRUCT, INSIDE	52-31-08
ACTUATOR, LIFT	3	SURROUND STRUCT, INSIDE	52-34-01
ACTUATOR, LOCK	3	DOOR STRUCT, INSIDE	52-31-03
ASSEMBLY, SAFETY STOP	3	DOOR STRUCT, INSIDE	52-31-10
GEARBOX DOOR LIFT	3	SURROUND STRUCT, INSIDE, OVERHEAD	52-34-02
GEARBOX, RIGHT ANGLE DRIVE	3	SURROUND STRUCT, INSIDE, FWD	52-34-05
HANDLE-SWITCH, DOOR UNLOCK	3	DOOR STRUCT, OUTSIDE	52-31-18
RELAYS:			
ACTUATOR POWER CONTROL	3	MESC, 192ER-1	52-34-01
LOCK ACTUATOR CONTROL	3	CARGO COMPT CEILING	52-34-00
SHAFT, MANUAL DRIVE FLEX	3	SURROUND STRUCT, INSIDE, FWD	52-34-05
SWITCH, DOOR CLOSED LIMIT	3	DOOR STRUCT, AFT END	52-31-16
SWITCH BOX, CARGO DOOR ACTUATION	3	DOOR STRUCT, OUTSIDE, FWD	52-34-13

M1-0001-52-201

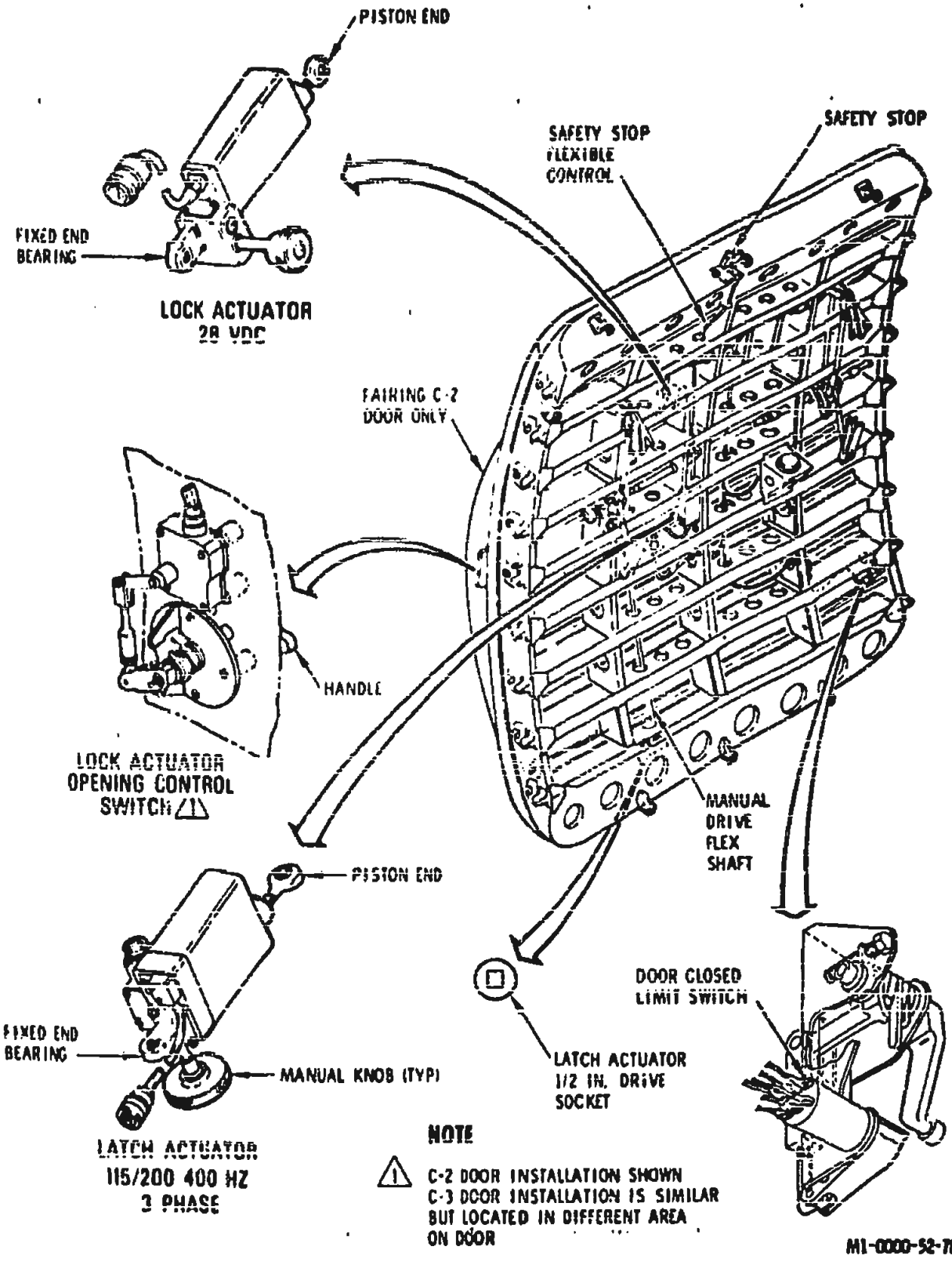
R
R Cargo Door Component Location Index
Figure 101

EFFECTIVITY: ALL

001B

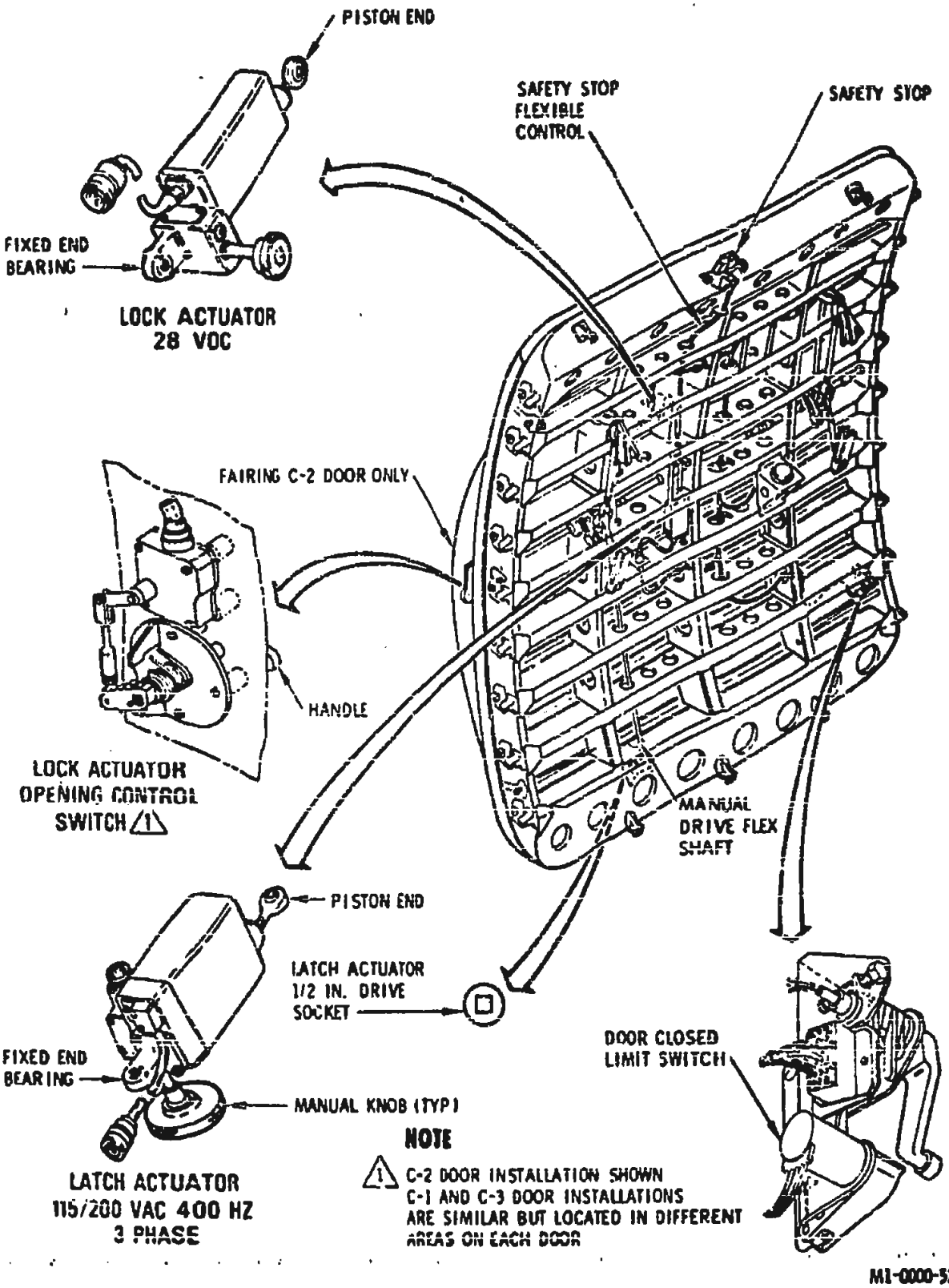

PISTON END
FIXED END BEARING
LOCK ACTUATOR 28 VDC
SAFETY STOP FLEXIBLE CONTROL
SAFETY STOP
FAIRING C-2 DOOR ONLY
HANDLE
LOCK ACTUATOR OPENING CONTROL SWITCH 1
MANUAL DRIVE FLEX SHAFT
PISTON END
LATCH ACTUATOR. 1/2 IN. DRIVE SOCKET
FIXED END BEARING
MANUAL KNOB (TYP)
LATCH ACTUATOR 115/200 VAC 400 HZ 3 PHASE
DOOR CLOSED SWITCH
SWITCH ADJUSTING BOLT
SPRING ROLLER SHAFT
NOTE
1 C-2 DOOR INSTALLATION SHOWN C-1 AND C-3 DOOR INSTALLATIONS ARE SIMILAR BUT LOCATED IN DIFFERENT AREAS ON EACH DOOR
M1-45400-52-395

Cargo Door System Component Locator Diagram
Figure 102 (Sheet 1)


PISTON END
FIXED END BEARING
LOCK ACTUATOR 28 VDC
SAFETY STOP FLEXIBLE CONTROL
SAFETY STOP
FAIRING C-2 DOOR ONLY
HANDLE
LOCK ACTUATOR OPENING CONTROL SWITCH /1\
MANUAL DRIVE FLEX SHAFT
PISTON END
FIXED END BEARING
MANUAL KNOB (TYP)
LATCH ACTUATOR 115/200 400 HZ 3 PHASE
LATCH ACTUATOR 1/2 IN. DRIVE SOCKET
DOOR CLOSED LIMIT SWITCH
NOTE
/1\ C-2 DOOR INSTALLATION SHOWN C-3 DOOR INSTALLATION IS SIMILAR BUT LOCATED IN DIFFERENT AREA ON DOOR
M1-0000-52-787

R R Cargo Door System Component Locator Diagram
Figure 102 (Sheet 1)

EFFECTIVITY: 032-036 WITHOUT SB52-159


PISTON END
FIXED END BEARING
LOCK ACTUATOR 28 VDC
SAFETY STOP FLEXIBLE CONTROL
SAFETY STOP
FAIRING C-2 DOOR ONLY
HANDLE
LOCK ACTUATOR OPENING CONTROL SWITCH /1\
MANUAL DRIVE FLEX SHAFT
PISTON END
LATCH ACTUATOR 1/2 IN. DRIVE SOCKET
FIXED END BEARING
MANUAL KNOB (TYP)
LATCH ACTUATOR 115/200 VAC 400 HZ 3 PHASE
DOOR CLOSED LIMIT SWITCH
NOTE
/1\ C-2 DOOR INSTALLATION SHOWN C-1 AND C-3 DOOR INSTALLATIONS ARE SIMILAR BUT LOCATED IN DIFFERENT AREAS ON EACH DOOR

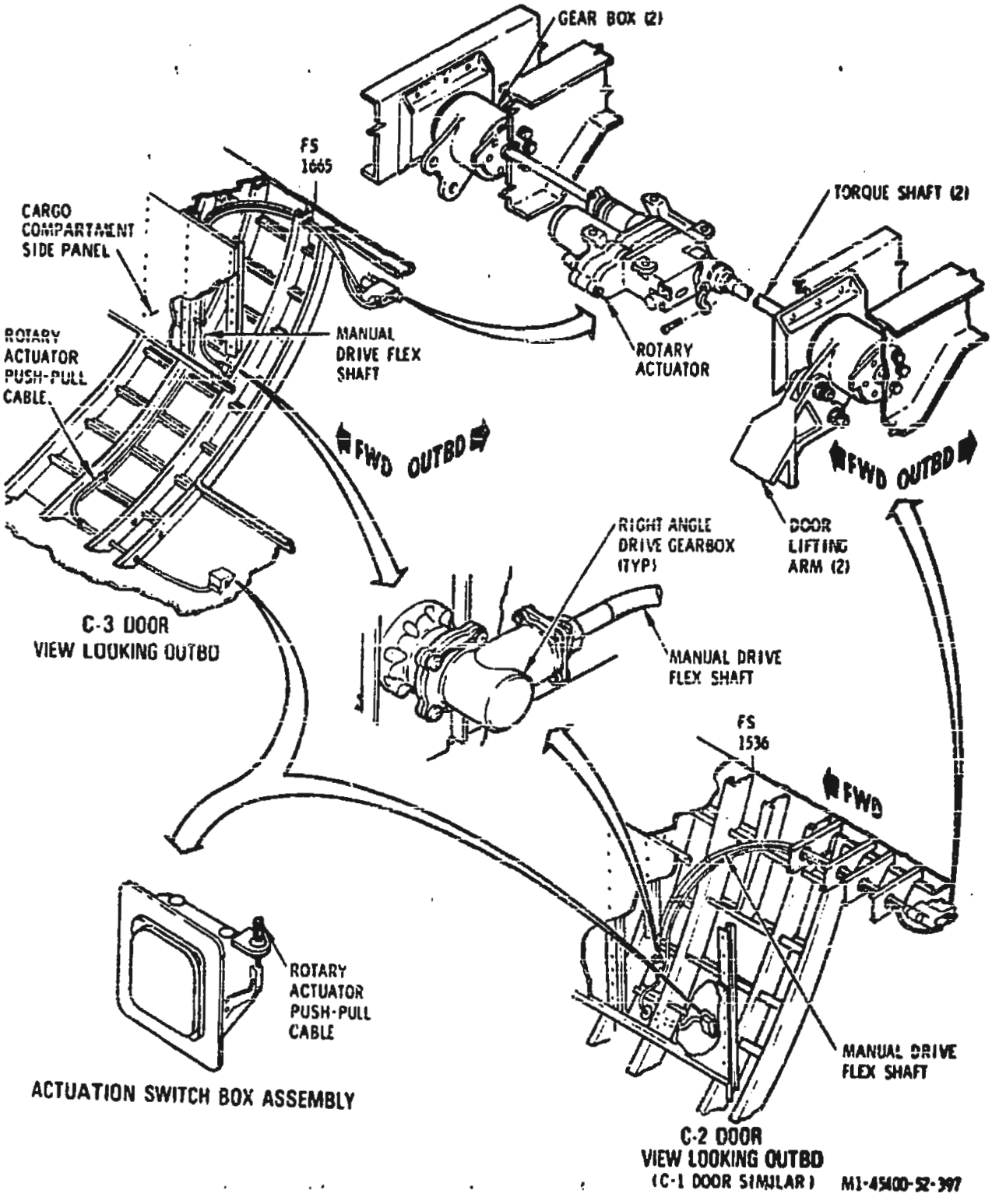
M1-0000-52-788

R
R

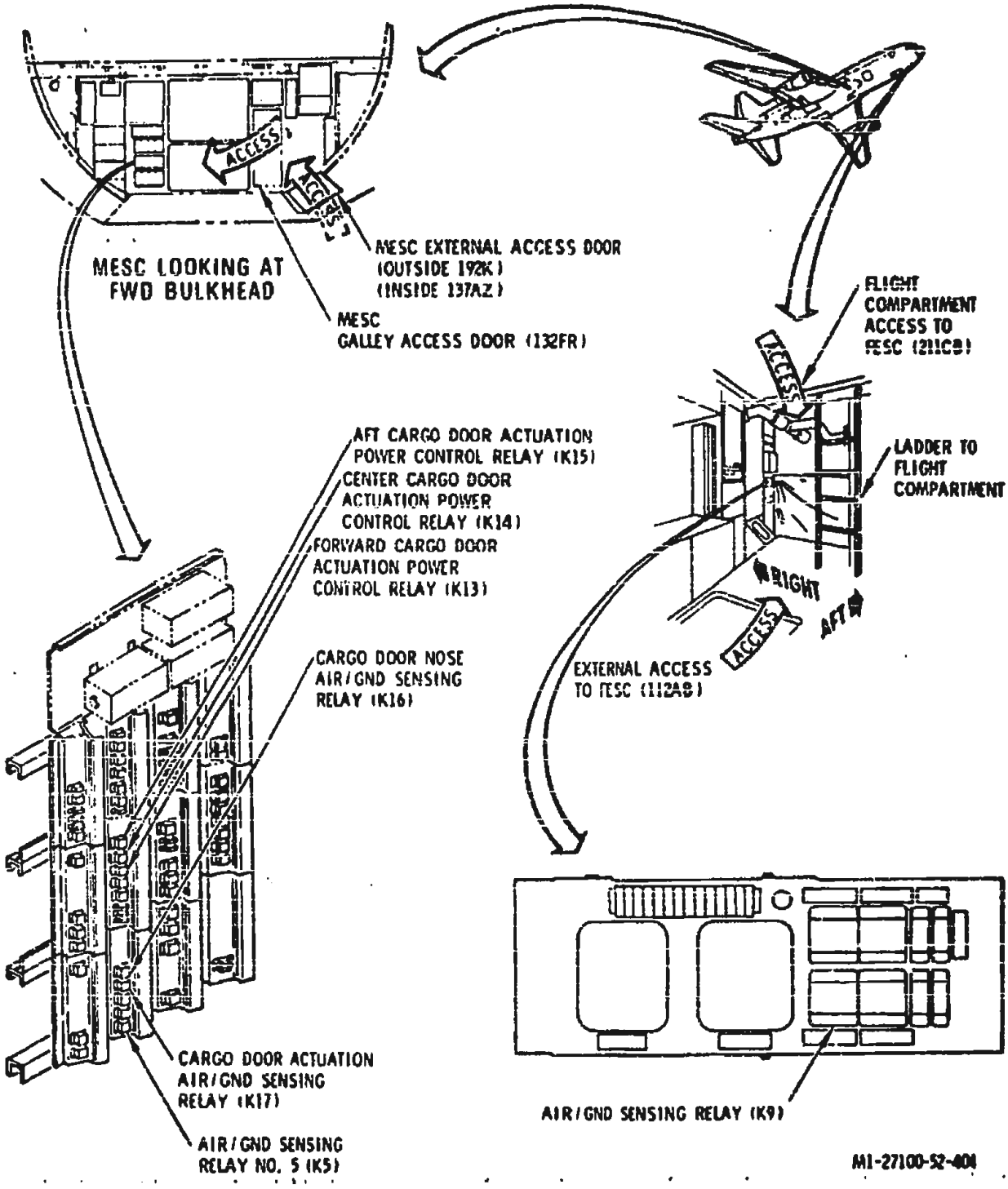
Cargo Door System Component Locator Diagram
Figure 102 (Sheet 1)

EFFECTIVITY: 001-031 WITH SB52-127RS, 032-036 WITH SB52-159, AND 037-999

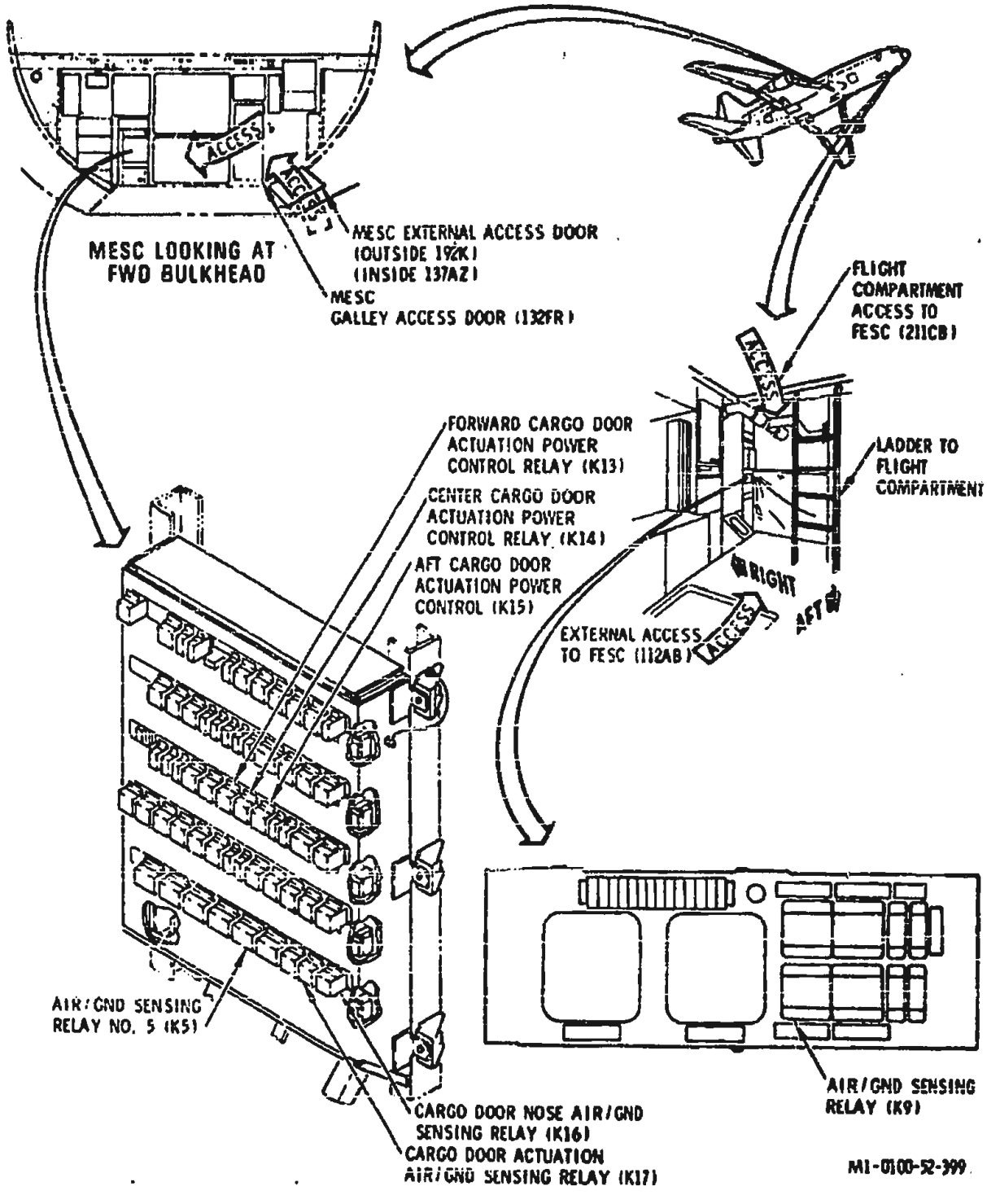
001B



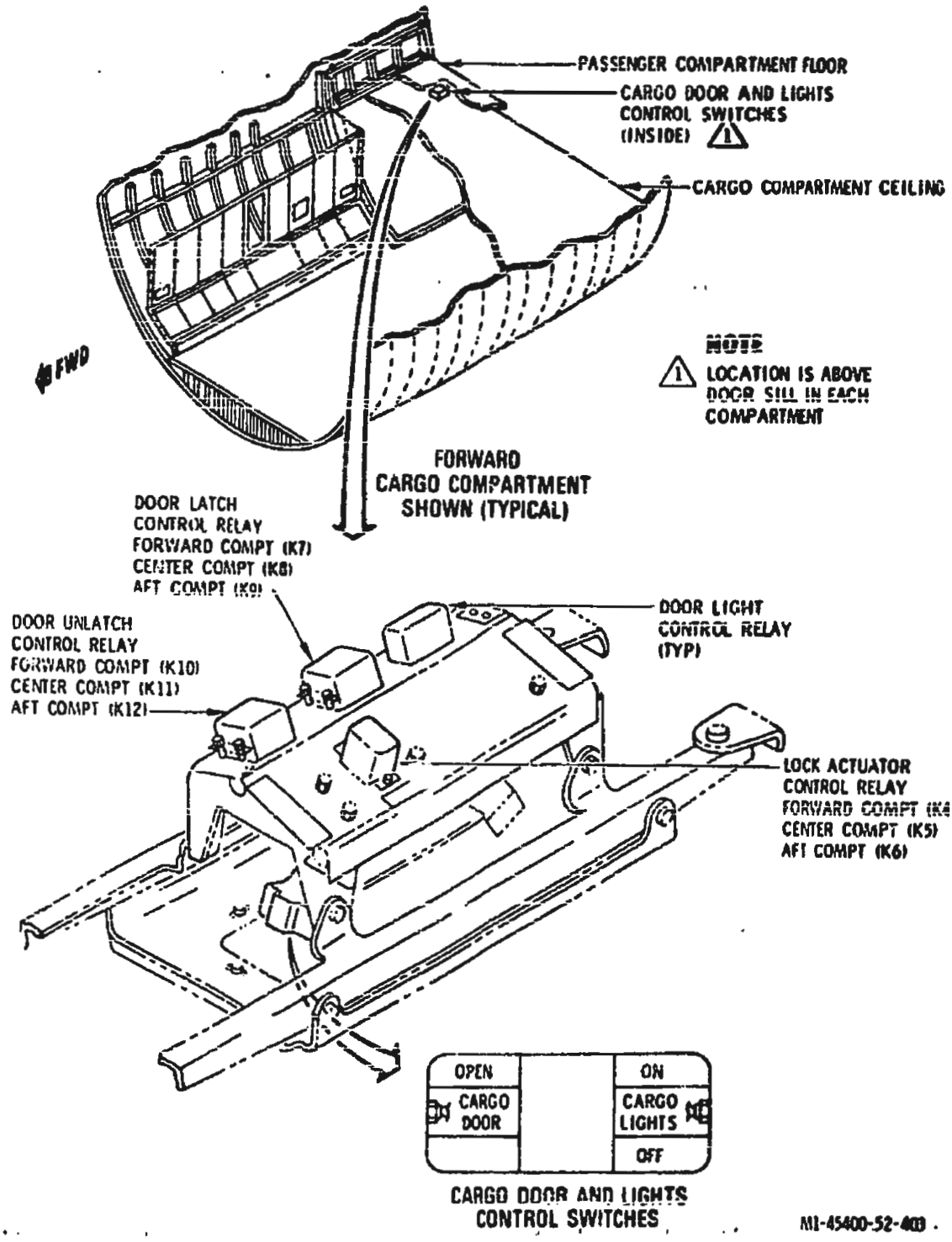
Cargo Door System Component Locator Diagram
Figure 102 (Sheet 2)


MESC LOOKING AT FWD BULKHEAD
ACCESS
MESC EXTERNAL ACCESS DOOR (OUTSIDE 192K) (INSIDE 137AZ)
MESC GALLEY ACCESS DOOR (132FR)
FLIGHT COMPARTMENT ACCESS TO MESC (211CB)
ACCESS
LADDER TO FLIGHT COMPARTMENT
AFT CARGO DOOR ACTUATION POWER CONTROL RELAY (K15)
CENTER CARGO DOOR ACTUATION POWER CONTROL RELAY (K14)
FORWARD CARGO DOOR ACTUATION POWER CONTROL RELAY (K13)
RIGHT
AFT
ACCESS
EXTERNAL ACCESS TO MESC (112AB)
CARGO DOOR NOSE AIR/GND SENSING RELAY (K16)
CARGO DOOR ACTUATION AIR/GND SENSING RELAY (K17)
AIR/GND SENSING RELAY NO. 5 (K5)
AIR/GND SENSING RELAY (K9)
M1-27100-52-401

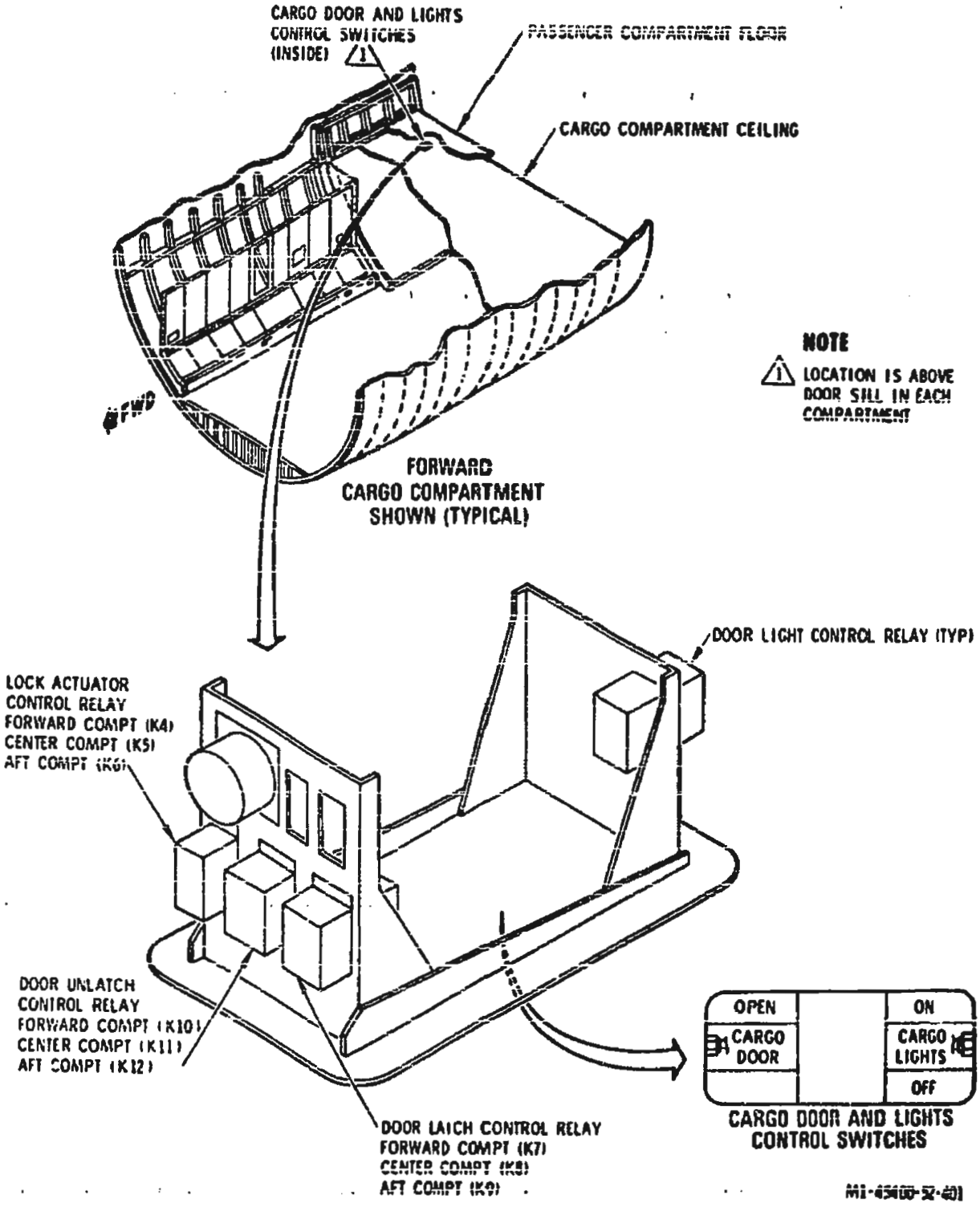
Cargo Door System Component Locator Diagram
Figure 102 (Sheet 3)


MESC LOOKING AT FWD BULKHEAD
ACCESS
MESC EXTERNAL ACCESS DOOR (OUTSIDE 192K) (INSIDE 137AZ)
MESC GALLEY ACCESS DOOR (132FR)
FLIGHT COMPARTMENT ACCESS TO FESC (211CB)
FORWARD CARGO DOOR ACTUATION POWER CONTROL RELAY (K13)
CENTER CARGO DOOR ACTUATION POWER CONTROL RELAY (K14)
AFT CARGO DOOR ACTUATION POWER CONTROL (K15)
LADDER TO FLIGHT COMPARTMENT
RIGHT
AFT
EXTERNAL ACCESS TO FESC (112AB)
AIR/GND SENSING RELAY NO. 5 (K5)
CARGO DOOR NOSE AIR/GND SENSING RELAY (K16)
CARGO DOOR ACTUATION AIR/GND SENSING RELAY (K17)
AIR/GND SENSING RELAY (K9)
M1-0100-52-399

Cargo Door System Component Locator Diagram
Figure 102 (Sheet 3)


PASSENGER COMPARTMENT FLOOR
CARGO DOOR AND LIGHTS CONTROL SWITCHES (INSIDE) 1
CARGO COMPARTMENT CEILING
FWD
NOTE
1 LOCATION IS ABOVE DOOR SILL IN EACH COMPARTMENT
FORWARD CARGO COMPARTMENT SHOWN (TYPICAL)
DOOR LATCH CONTROL RELAY FORWARD COMPT (K7) CENTER COMPT (K8) AFT COMPT (K9)
DOOR UNLATCH CONTROL RELAY FORWARD COMPT (K10) CENTER COMPT (K11) AFT COMPT (K12)
DOOR LIGHT CONTROL RELAY (TYP)
LOCK ACTUATOR CONTROL RELAY FORWARD COMPT (K4) CENTER COMPT (K5) AFT COMPT (K6)
OPEN
CARGO DOOR
ON
CARGO LIGHTS
OFF
CARGO DOOR AND LIGHTS CONTROL SWITCHES
MI-45400-52-403

Cargo Door System Component Locator Diagram
Figure 102 (Sheet 4)


CARGO DOOR AND LIGHTS CONTROL SWITCHES (INSIDE) 1
PASSENGER COMPARTMENT FLOOR
CARGO COMPARTMENT CEILING
FWD
FORWARD CARGO COMPARTMENT SHOWN (TYPICAL)
NOTE
1 LOCATION IS ABOVE DOOR SILL IN EACH COMPARTMENT
DOOR LIGHT CONTROL RELAY (TYP)
LOCK ACTUATOR CONTROL RELAY FORWARD COMPT (K4) CENTER COMPT (K5) AFT COMPT (K6)
DOOR UNLATCH CONTROL RELAY FORWARD COMPT (K10) CENTER COMPT (K11) AFT COMPT (K12)
DOOR LATCH CONTROL RELAY FORWARD COMPT (K7) CENTER COMPT (K8) AFT COMPT (K9)
OPEN
CARGO DOOR
ON
CARGO LIGHTS
OFF
CARGO DOOR AND LIGHTS CONTROL SWITCHES
MI-45400-52-401

Cargo Door System Component Locator Diagram
Figure 102 (Sheet 4)

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CB'S: 1L10, 1L11
2L8
3H2, 3H3, 3H4
GALLEY LEFT
DOOR C-1 14C, 19C, 21E, 13E, AND 22C
C-2 17C, 20C, 21E, 14E, AND 22C
C-3 18D, 21C, 21E, 15E, AND 22C

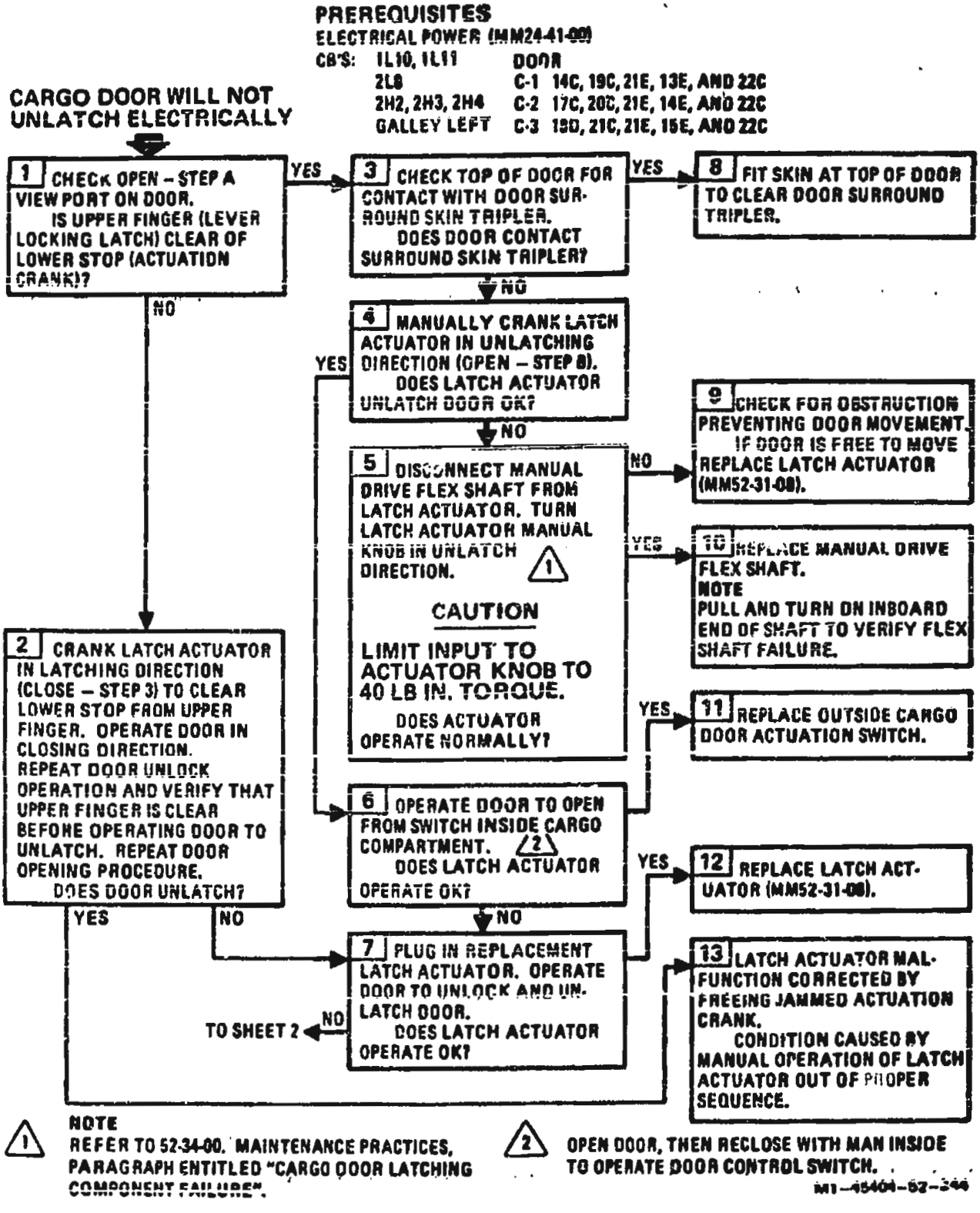
CARGO DOOR WILL NOT UNLOCK ELECTRICALLY

1 IS CARGO DOOR LOCK ACTUATOR INDICATING (GREEN) LIGHT ON?
- NO → 4 DO OTHER CARGO DOORS OPERATE OK?
  - NO → 9 CHECK AIR/GROUND PROXIMITY SENSING SYSTEM (MM32-03-00).
  - YES
- YES

2 CHECK OPEN – STEP A VIEW PORT ON DOOR. IS UPPER FINGER (LEVER LOCKING LATCH) CLEAR OF LOWER STOP (ACTUATION CRANK)?
- YES → 5 TURN LOCK ACTUATOR MANUAL KNOB A FEW TURNS IN OPENING DIRECTION. OPERATE UNLOCK SWITCH TO UNLOCK DOOR. DOES DOOR UNLOCK OK?
  - YES → 10 VERIFY THAT LOCK ACTUATOR IS INSTALLED CORRECTLY (MM52-31-03).
  - NO → 6 MANUALLY TURN ACTUATOR KNOB TO UNLOCK DOOR. DOES DOOR UNLOCK OK?
    - YES → 8 CHECK DC VOLTAGE TO LOCK ACTUATOR ELECTRICAL PLUG PIN 3 WHILE OPERATING LOCK ACTUATOR OPENING CONTROL SWITCH TO UNLOCK DOOR. IS VOLTAGE OK?
      - YES → 12 REPLACE LOCK ACTUATOR (MM52-31-03). IF FAULT PERSISTS, CHECK LOCK ACTUATOR CIRCUIT (MM52-34-01, 02, 03).
      - NO → 13 REPLACE LOCK ACTUATOR OPENING CONTROL SWITCH.
    - NO → 7 DISCONNECT SAFETY STOP PUSH-PULL CABLE FROM LEVER LOCKING LATCH. REPEAT DOOR UNLOCKING OPERATION. DOES LOCK ACTUATOR OPERATE OK?
      - YES → 11 REPLACE SAFETY STOP PUSH-PULL CABLE (MM52-31-10).
      - NO → 12 REPLACE LOCK ACTUATOR (MM52-31-03). IF FAULT PERSISTS, CHECK LOCK ACTUATOR CIRCUIT (MM52-34-01, 02, 03).
- NO → 3 CRANK LATCH ACTUATOR IN LATCHING DIRECTION (CLOSE – STEP 3) TO CLEAR LOWER STOP FROM UPPER FINGER. OPERATE DOOR IN CLOSING DIRECTION. REPEAT DOOR UNLOCK OPERATION. DOES DOOR UNLOCK OK?
  - NO → 5 TURN LOCK ACTUATOR MANUAL KNOB A FEW TURNS IN OPENING DIRECTION. OPERATE UNLOCK SWITCH TO UNLOCK DOOR. DOES DOOR UNLOCK OK?
  - YES → 14 LOCK ACTUATOR MALFUNCTION CORRECTED BY FREEING JAMMED ACTUATION CRANK. CONDITION CAUSED BY ACTUATOR OPERATION OUT OF PROPER SEQUENCE.

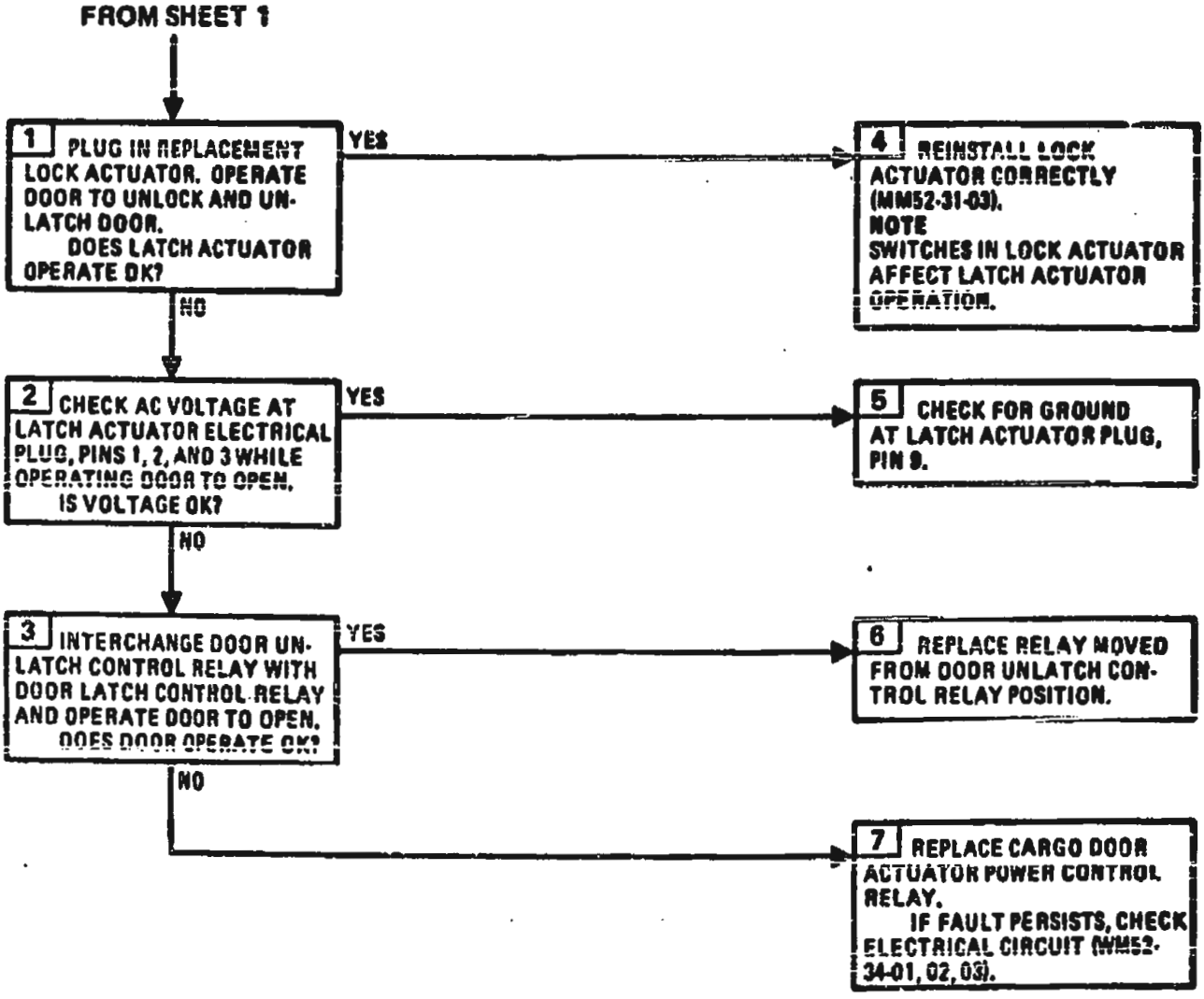
M1-0102-82-343

Cargo Door Will Not Unlock Electrically
Figure 103


PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CB'S: 1L10, 1L11
2L8
2H2, 2H3, 2H4
GALLEY LEFT
DOOR
C-1 14C, 19C, 21E, 13E, AND 22C
C-2 17C, 20C, 21E, 14E, AND 22C
C-3 19C, 21C, 21E, 15E, AND 22C
CARGO DOOR WILL NOT UNLATCH ELECTRICALLY
1 CHECK OPEN – STEP A VIEW PORT ON DOOR. IS UPPER FINGER (LEVER LOCKING LATCH) CLEAR OF LOWER STOP (ACTUATION CRANK)?
YES
NO
2 CRANK LATCH ACTUATOR IN LATCHING DIRECTION (CLOSE – STEP 3) TO CLEAR LOWER STOP FROM UPPER FINGER. OPERATE DOOR IN CLOSING DIRECTION. REPEAT DOOR UNLOCK OPERATION AND VERIFY THAT UPPER FINGER IS CLEAR BEFORE OPERATING DOOR TO UNLATCH. REPEAT DOOR OPENING PROCEDURE. DOES DOOR UNLATCH?
YES
NO
3 CHECK TOP OF DOOR FOR CONTACT WITH DOOR SURROUND SKIN TRIPLER. DOES DOOR CONTACT SURROUND SKIN TRIPLER?
YES
NO
8 FIT SKIN AT TOP OF DOOR TO CLEAR DOOR SURROUND TRIPLER.
4 MANUALLY CRANK LATCH ACTUATOR IN UNLATCHING DIRECTION (OPEN – STEP 8). DOES LATCH ACTUATOR UNLATCH DOOR OK?
YES
NO
5 DISCONNECT MANUAL DRIVE FLEX SHAFT FROM LATCH ACTUATOR. TURN LATCH ACTUATOR MANUAL KNOB IN UNLATCH DIRECTION. 1
CAUTION
LIMIT INPUT TO ACTUATOR KNOB TO 40 LB IN. TORQUE.
DOES ACTUATOR OPERATE NORMALLY?
NO
9 CHECK FOR OBSTRUCTION PREVENTING DOOR MOVEMENT. IF DOOR IS FREE TO MOVE REPLACE LATCH ACTUATOR (MM52-31-08).
YES
10 REPLACE MANUAL DRIVE FLEX SHAFT.
NOTE
PULL AND TURN ON INBOARD END OF SHAFT TO VERIFY FLEX SHAFT FAILURE.
YES
11 REPLACE OUTSIDE CARGO DOOR ACTUATION SWITCH.
6 OPERATE DOOR TO OPEN FROM SWITCH INSIDE CARGO COMPARTMENT. 2 DOES LATCH ACTUATOR OPERATE OK?
YES
12 REPLACE LATCH ACTUATOR (MM52-31-08).
NO
7 PLUG IN REPLACEMENT LATCH ACTUATOR. OPERATE DOOR TO UNLOCK AND UNLATCH DOOR. DOES LATCH ACTUATOR OPERATE OK?
NO
TO SHEET 2
YES
13 LATCH ACTUATOR MALFUNCTION CORRECTED BY FREEING JAMMED ACTUATION CRANK. CONDITION CAUSED BY MANUAL OPERATION OF LATCH ACTUATOR OUT OF PROPER SEQUENCE.
1 NOTE
REFER TO 52-34-00, MAINTENANCE PRACTICES, PARAGRAPH ENTITLED "CARGO DOOR LATCHING COMPONENT FAILURE".
2 OPEN DOOR, THEN RECLOSE WITH MAN INSIDE TO OPERATE DOOR CONTROL SWITCH.
M1-45404-52-346

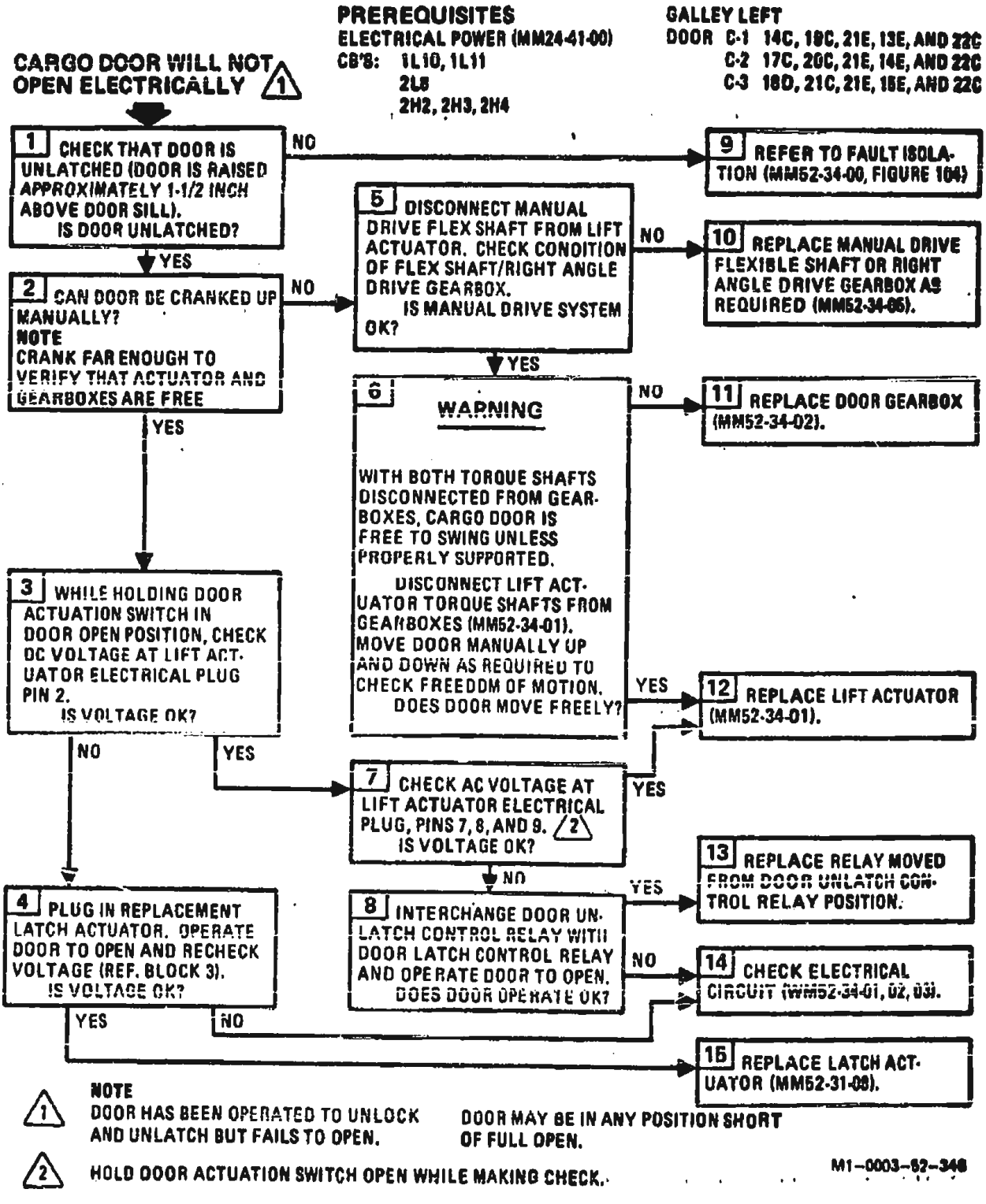
Cargo Door Will Not Unlatch Electrically
Figure 104 (Sheet 1)

R
R
0018 EFFECTIVITY: ALL

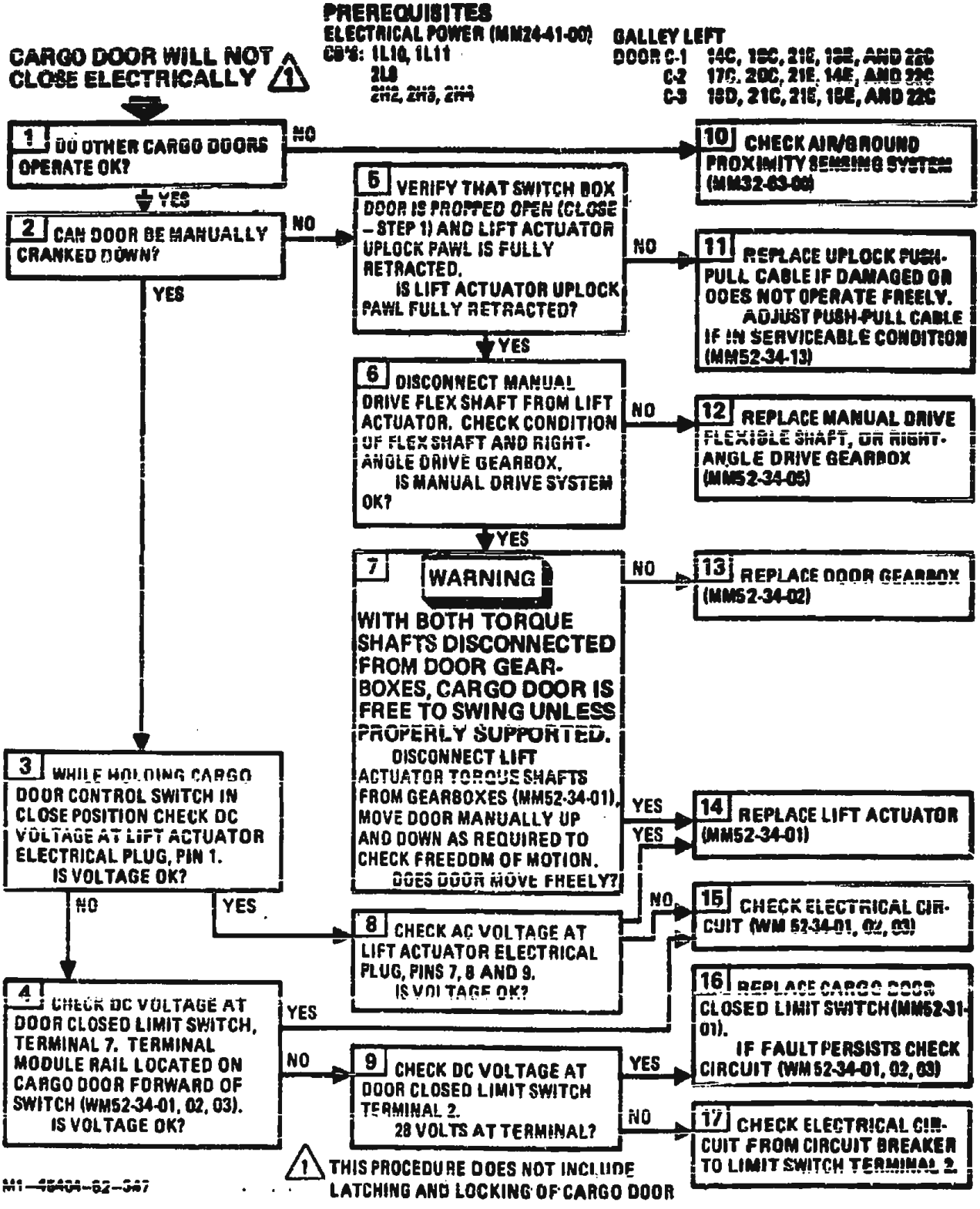

FROM SHEET 1
1 PLUG IN REPLACEMENT LOCK ACTUATOR. OPERATE DOOR TO UNLOCK AND UNLATCH DOOR.
DOES LATCH ACTUATOR OPERATE OK?
YES
4 REINSTALL LOCK ACTUATOR CORRECTLY (MM52-31-03).
NOTE
SWITCHES IN LOCK ACTUATOR AFFECT LATCH ACTUATOR OPERATION.
NO
2 CHECK AC VOLTAGE AT LATCH ACTUATOR ELECTRICAL PLUG, PINS 1, 2, AND 3 WHILE OPERATING DOOR TO OPEN.
IS VOLTAGE OK?
YES
5 CHECK FOR GROUND AT LATCH ACTUATOR PLUG, PIN 9.
NO
3 INTERCHANGE DOOR UNLATCH CONTROL RELAY WITH DOOR LATCH CONTROL RELAY AND OPERATE DOOR TO OPEN.
DOES DOOR OPERATE OK?
YES
6 REPLACE RELAY MOVED FROM DOOR UNLATCH CONTROL RELAY POSITION.
NO
7 REPLACE CARGO DOOR ACTUATOR POWER CONTROL RELAY.
IF FAULT PERSISTS, CHECK ELECTRICAL CIRCUIT (MM52-34-01, 02, 03).

M1-0102-82-348

Cargo Door Will Not Unlatch Electrically
Figure 104 (Sheet 2)

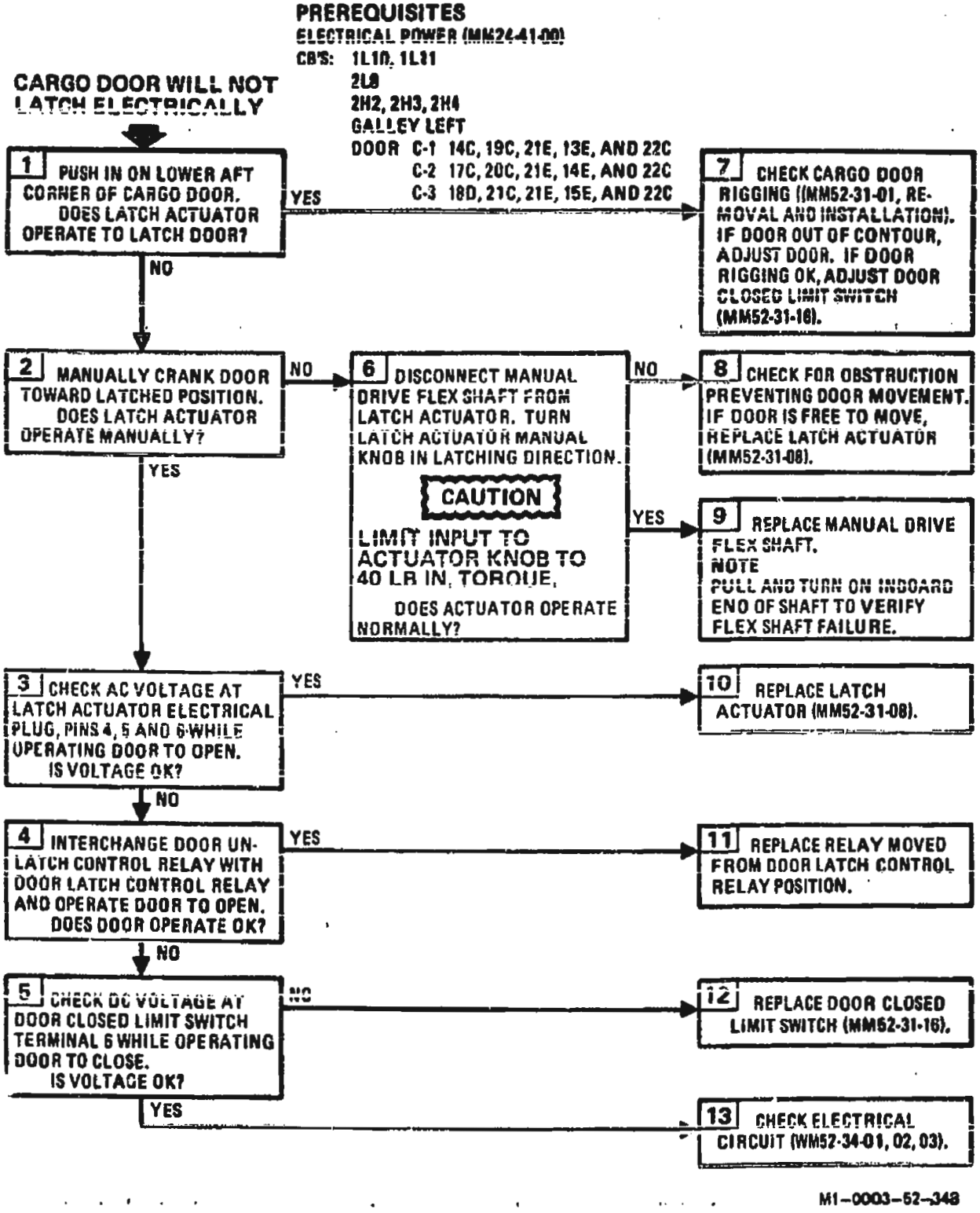

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CB'S: 1L10, 1L11
2L8
2H2, 2H3, 2H4
GALLEY LEFT
DOOR C-1 14C, 19C, 21E, 13E, AND 22C
C-2 17C, 20C, 21E, 14E, AND 22C
C-3 18D, 21C, 21E, 15E, AND 22C
CARGO DOOR WILL NOT OPEN ELECTRICALLY 1
1 CHECK THAT DOOR IS UNLATCHED (DOOR IS RAISED APPROXIMATELY 1-1/2 INCH ABOVE DOOR SILL). IS DOOR UNLATCHED?
NO
9 REFER TO FAULT ISOLATION (MM52-34-00, FIGURE 104)
YES
2 CAN DOOR BE CRANKED UP MANUALLY? NOTE CRANK FAR ENOUGH TO VERIFY THAT ACTUATOR AND GEARBOXES ARE FREE
NO
5 DISCONNECT MANUAL DRIVE FLEX SHAFT FROM LIFT ACTUATOR. CHECK CONDITION OF FLEX SHAFT/RIGHT ANGLE DRIVE GEARBOX. IS MANUAL DRIVE SYSTEM OK?
NO
10 REPLACE MANUAL DRIVE FLEXIBLE SHAFT OR RIGHT ANGLE DRIVE GEARBOX AS REQUIRED (MM52-34-05).
YES
YES
6 WARNING
WITH BOTH TORQUE SHAFTS DISCONNECTED FROM GEARBOXES, CARGO DOOR IS FREE TO SWING UNLESS PROPERLY SUPPORTED.
DISCONNECT LIFT ACTUATOR TORQUE SHAFTS FROM GEARBOXES (MM52-34-01). MOVE DOOR MANUALLY UP AND DOWN AS REQUIRED TO CHECK FREEDOM OF MOTION. DOES DOOR MOVE FREELY?
NO
11 REPLACE DOOR GEARBOX (MM52-34-02).
YES
12 REPLACE LIFT ACTUATOR (MM52-34-01).
3 WHILE HOLDING DOOR ACTUATION SWITCH IN DOOR OPEN POSITION, CHECK DC VOLTAGE AT LIFT ACTUATOR ELECTRICAL PLUG PIN 2. IS VOLTAGE OK?
NO
YES
7 CHECK AC VOLTAGE AT LIFT ACTUATOR ELECTRICAL PLUG, PINS 7, 8, AND 9. 2 IS VOLTAGE OK?
YES
NO
13 REPLACE RELAY MOVED FROM DOOR UNLATCH CONTROL RELAY POSITION.
4 PLUG IN REPLACEMENT LATCH ACTUATOR. OPERATE DOOR TO OPEN AND RECHECK VOLTAGE (REF. BLOCK 3). IS VOLTAGE OK?
8 INTERCHANGE DOOR UNLATCH CONTROL RELAY WITH DOOR LATCH CONTROL RELAY AND OPERATE DOOR TO OPEN. DOES DOOR OPERATE OK?
YES
NO
14 CHECK ELECTRICAL CIRCUIT (MM52-34-01, 02, 03).
YES
NO
15 REPLACE LATCH ACTUATOR (MM52-31-08).
1 NOTE
DOOR HAS BEEN OPERATED TO UNLOCK AND UNLATCH BUT FAILS TO OPEN. DOOR MAY BE IN ANY POSITION SHORT OF FULL OPEN.
2 HOLD DOOR ACTUATION SWITCH OPEN WHILE MAKING CHECK.
M1-0003-52-346

R Cargo Door Will Not Open Electrically
R Figure 105


PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CB'S: 1L10, 1L11
2L8
2H2, 2H3, 2H4
GALLEY LEFT
DOOR C-1 14C, 18C, 21E, 18E, AND 22C
C-2 17C, 20C, 21E, 14E, AND 22C
C-3 18D, 21C, 21E, 18E, AND 22C
CARGO DOOR WILL NOT CLOSE ELECTRICALLY (1)
1 DO OTHER CARGO DOORS OPERATE OK?
NO
10 CHECK AIR/GROUND PROXIMITY SENSING SYSTEM (MM32-03-00)
YES
2 CAN DOOR BE MANUALLY CRANKED DOWN?
NO
5 VERIFY THAT SWITCH BOX DOOR IS PROPPED OPEN (CLOSE – STEP 1) AND LIFT ACTUATOR UPLOCK PAWL IS FULLY RETRACTED.
IS LIFT ACTUATOR UPLOCK PAWL FULLY RETRACTED?
NO
11 REPLACE UPLOCK PUSH-PULL CABLE IF DAMAGED OR DOES NOT OPERATE FREELY.
ADJUST PUSH-PULL CABLE IF IN SERVICEABLE CONDITION (MM52-34-13)
YES
YES
6 DISCONNECT MANUAL DRIVE FLEX SHAFT FROM LIFT ACTUATOR. CHECK CONDITION OF FLEX SHAFT AND RIGHT-ANGLE DRIVE GEARBOX.
IS MANUAL DRIVE SYSTEM OK?
NO
12 REPLACE MANUAL DRIVE FLEXIBLE SHAFT, OR RIGHT-ANGLE DRIVE GEARBOX (MM52-34-05)
YES
7 WARNING
WITH BOTH TORQUE SHAFTS DISCONNECTED FROM DOOR GEARBOXES, CARGO DOOR IS FREE TO SWING UNLESS PROPERLY SUPPORTED.
DISCONNECT LIFT ACTUATOR TORQUE SHAFTS FROM GEARBOXES (MM52-34-01), MOVE DOOR MANUALLY UP AND DOWN AS REQUIRED TO CHECK FREEDOM OF MOTION.
DOES DOOR MOVE FREELY?
NO
13 REPLACE DOOR GEARBOX (MM52-34-02)
YES
14 REPLACE LIFT ACTUATOR (MM52-34-01)
YES
3 WHILE HOLDING CARGO DOOR CONTROL SWITCH IN CLOSE POSITION CHECK DC VOLTAGE AT LIFT ACTUATOR ELECTRICAL PLUG, PIN 1.
IS VOLTAGE OK?
NO
YES
8 CHECK AC VOLTAGE AT LIFT ACTUATOR ELECTRICAL PLUG, PINS 7, 8 AND 9.
IS VOLTAGE OK?
NO
15 CHECK ELECTRICAL CIRCUIT (WM 52-34-01, 02, 03)
4 CHECK DC VOLTAGE AT DOOR CLOSED LIMIT SWITCH, TERMINAL 7. TERMINAL MODULE RAIL LOCATED ON CARGO DOOR FORWARD OF SWITCH (WM52-34-01, 02, 03).
IS VOLTAGE OK?
YES
16 REPLACE CARGO DOOR CLOSED LIMIT SWITCH (MM52-34-01).
IF FAULT PERSISTS CHECK CIRCUIT (WM 52-34-01, 02, 03)
NO
9 CHECK DC VOLTAGE AT DOOR CLOSED LIMIT SWITCH TERMINAL 2.
28 VOLTS AT TERMINAL?
YES
NO
17 CHECK ELECTRICAL CIRCUIT FROM CIRCUIT BREAKER TO LIMIT SWITCH TERMINAL 2.
(1) THIS PROCEDURE DOES NOT INCLUDE LATCHING AND LOCKING OF CARGO DOOR
M1—45404—82—347

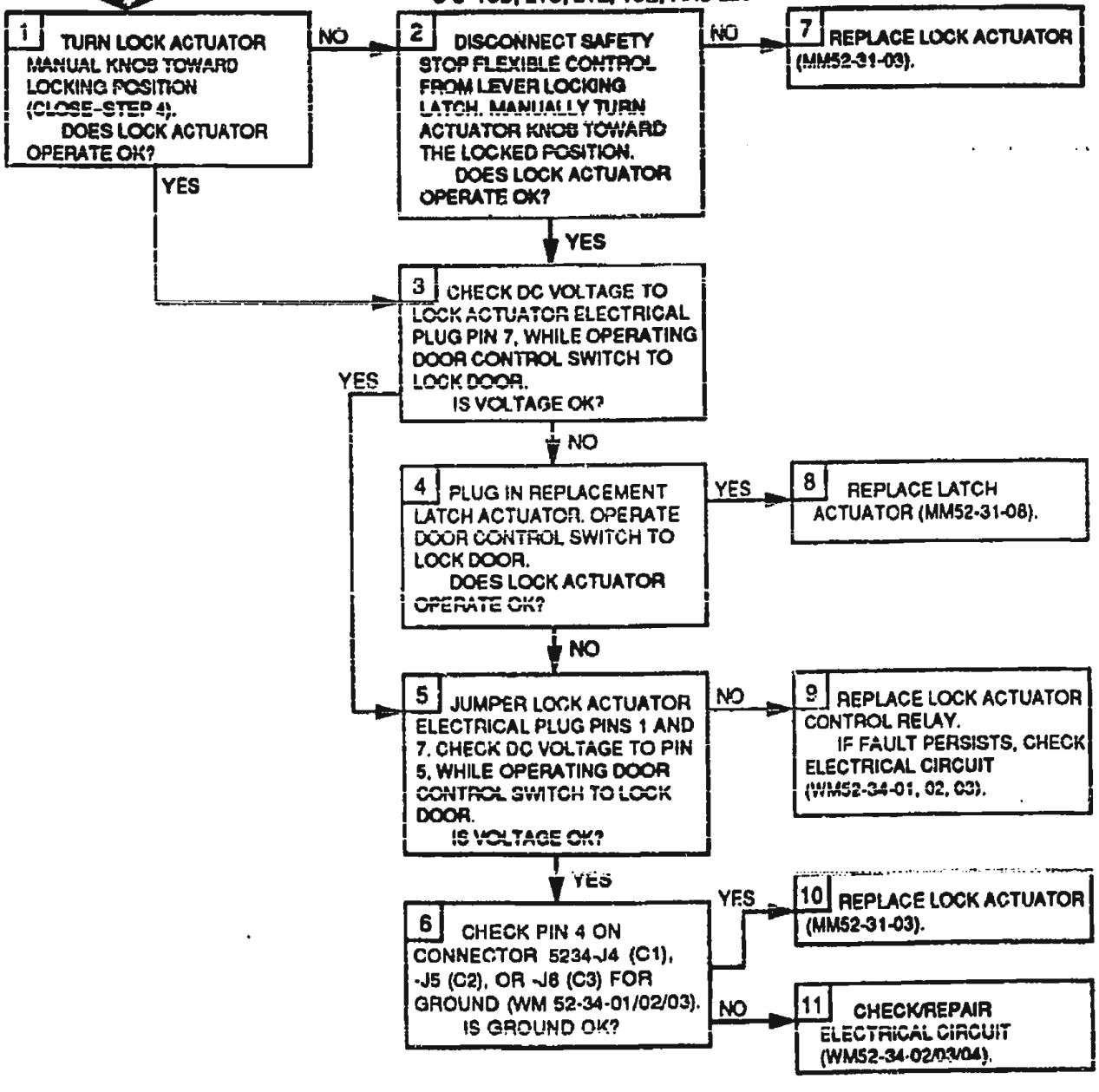
Cargo Door Will Not Close Electrically
Figure 106

R EFFECTIVITY: ALL
R
0019


PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CB'S: 1L10, 1L31
2L8
2H2, 2H3, 2H4
GALLEY LEFT
DOOR C-1 14C, 19C, 21E, 13E, AND 22C
C-2 17C, 20C, 21E, 14E, AND 22C
C-3 18D, 21C, 21E, 15E, AND 22C
CARGO DOOR WILL NOT LATCH ELECTRICALLY
1 PUSH IN ON LOWER AFT CORNER OF CARGO DOOR. DOES LATCH ACTUATOR OPERATE TO LATCH DOOR?
YES
NO
7 CHECK CARGO DOOR RIGGING (MM52-31-01, REMOVAL AND INSTALLATION). IF DOOR OUT OF CONTOUR, ADJUST DOOR. IF DOOR RIGGING OK, ADJUST DOOR CLOSED LIMIT SWITCH (MM52-31-16).
2 MANUALLY CRANK DOOR TOWARD LATCHED POSITION. DOES LATCH ACTUATOR OPERATE MANUALLY?
NO
YES
6 DISCONNECT MANUAL DRIVE FLEX SHAFT FROM LATCH ACTUATOR. TURN LATCH ACTUATOR MANUAL KNOB IN LATCHING DIRECTION.
CAUTION
LIMIT INPUT TO ACTUATOR KNOB TO 40 LB IN. TORQUE.
DOES ACTUATOR OPERATE NORMALLY?
NO
8 CHECK FOR OBSTRUCTION PREVENTING DOOR MOVEMENT. IF DOOR IS FREE TO MOVE, REPLACE LATCH ACTUATOR (MM52-31-08).
YES
9 REPLACE MANUAL DRIVE FLEX SHAFT.
NOTE
PULL AND TURN ON INBOARD END OF SHAFT TO VERIFY FLEX SHAFT FAILURE.
3 CHECK AC VOLTAGE AT LATCH ACTUATOR ELECTRICAL PLUG, PINS 4, 5 AND 6 WHILE OPERATING DOOR TO OPEN. IS VOLTAGE OK?
YES
10 REPLACE LATCH ACTUATOR (MM52-31-08).
NO
4 INTERCHANGE DOOR UNLATCH CONTROL RELAY WITH DOOR LATCH CONTROL RELAY AND OPERATE DOOR TO OPEN. DOES DOOR OPERATE OK?
YES
11 REPLACE RELAY MOVED FROM DOOR LATCH CONTROL RELAY POSITION.
NO
5 CHECK DC VOLTAGE AT DOOR CLOSED LIMIT SWITCH TERMINAL 6 WHILE OPERATING DOOR TO CLOSE. IS VOLTAGE OK?
NO
12 REPLACE DOOR CLOSED LIMIT SWITCH (MM52-31-16).
YES
13 CHECK ELECTRICAL CIRCUIT (WM52-34-01, 02, 03).
M1-0003-52-348

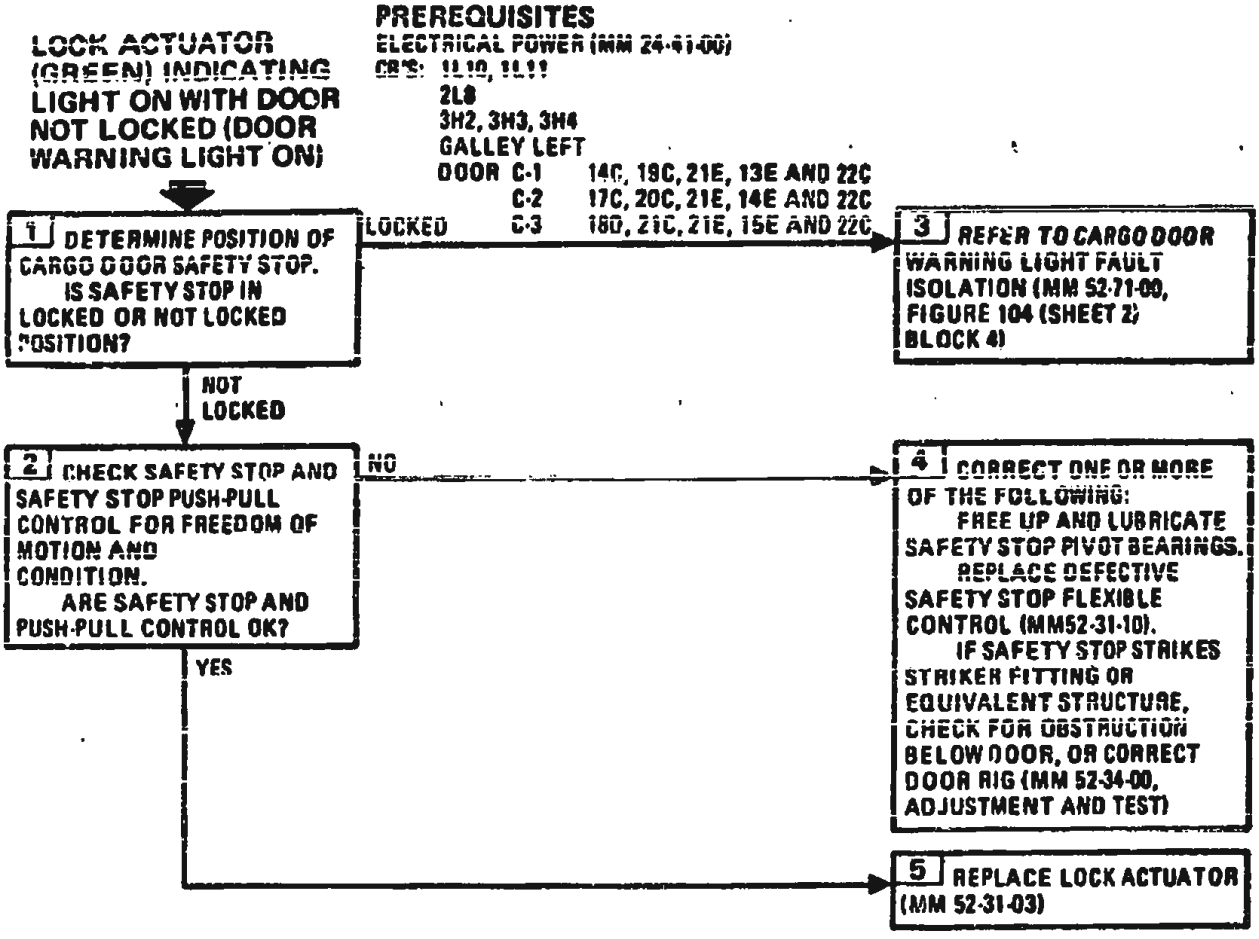
Cargo Door Will Not Latch Electrically
Figure 107

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CB'S: 1L10, 1L11
2L6
3H2, 3H3, 3H4
GALLEY LEFT
DOOR C-1 14C, 19C, 21E, 13E, AND 22C
C-2 17C, 20C, 21E, 14E, AND 22C
C-3 18D, 21C, 21E, 15E, AND 22C


CARGO DOOR WILL NOT LOCK ELECTRICALLY
1 TURN LOCK ACTUATOR MANUAL KNOB TOWARD LOCKING POSITION (CLOSE-STEP 4). DOES LOCK ACTUATOR OPERATE OK?
NO
2 DISCONNECT SAFETY STOP FLEXIBLE CONTROL FROM LEVER LOCKING LATCH. MANUALLY TURN ACTUATOR KNOB TOWARD THE LOCKED POSITION. DOES LOCK ACTUATOR OPERATE OK?
NO
7 REPLACE LOCK ACTUATOR (MM52-31-03).
YES
YES
3 CHECK DC VOLTAGE TO LOCK ACTUATOR ELECTRICAL PLUG PIN 7, WHILE OPERATING DOOR CONTROL SWITCH TO LOCK DOOR. IS VOLTAGE OK?
YES
NO
4 PLUG IN REPLACEMENT LATCH ACTUATOR. OPERATE DOOR CONTROL SWITCH TO LOCK DOOR. DOES LOCK ACTUATOR OPERATE OK?
YES
8 REPLACE LATCH ACTUATOR (MM52-31-08).
NO
5 JUMPER LOCK ACTUATOR ELECTRICAL PLUG PINS 1 AND 7. CHECK DC VOLTAGE TO PIN 5, WHILE OPERATING DOOR CONTROL SWITCH TO LOCK DOOR. IS VOLTAGE OK?
NO
9 REPLACE LOCK ACTUATOR CONTROL RELAY. IF FAULT PERSISTS, CHECK ELECTRICAL CIRCUIT (WM52-34-01, 02, 03).
YES
6 CHECK PIN 4 ON CONNECTOR 5234-J4 (C1), -J5 (C2), OR -J6 (C3) FOR GROUND (WM 52-34-01/02/03). IS GROUND OK?
YES
10 REPLACE LOCK ACTUATOR (MM52-31-03).
NO
11 CHECK/REPAIR ELECTRICAL CIRCUIT (WM52-34-02/03/04).

M1-0004-52-349

R Cargo Door Will Not Lock Electrically
R Figure 108

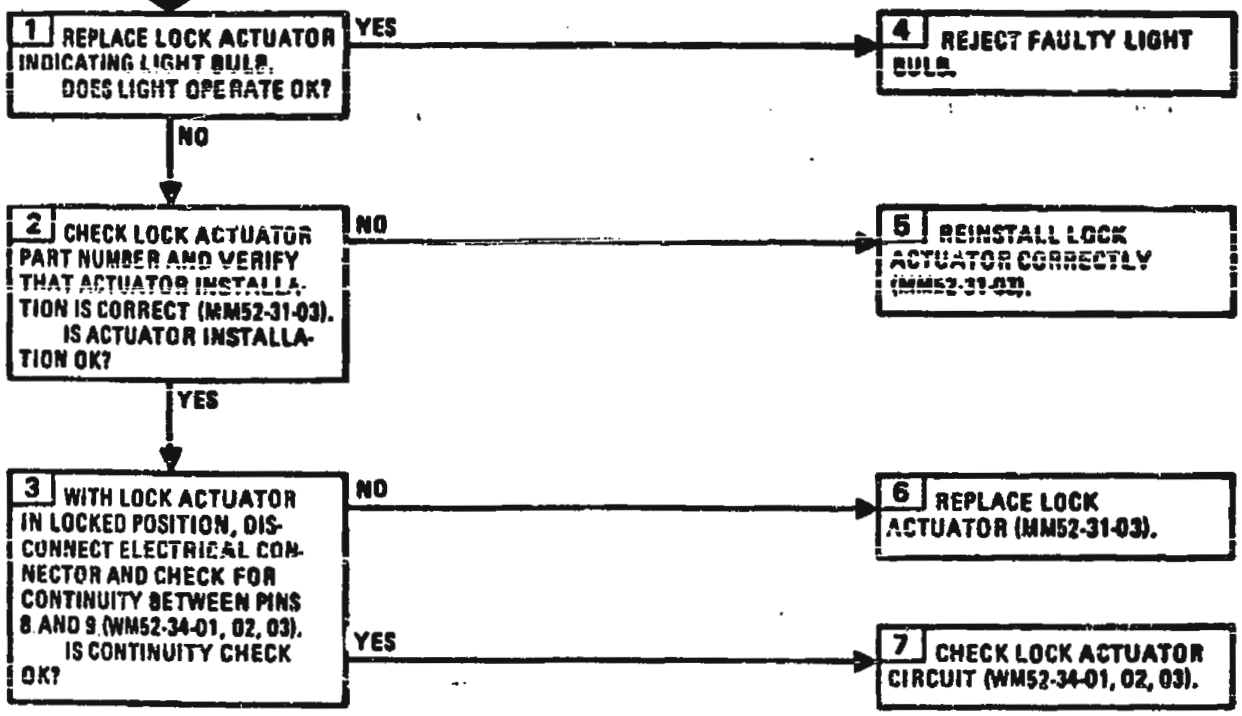

LOCK ACTUATOR (GREEN) INDICATING LIGHT ON WITH DOOR NOT LOCKED (DOOR WARNING LIGHT ON)
PREREQUISITES
ELECTRICAL POWER (MM 24-41-00)
CB'S: 1L10, 1L11
2L8
3H2, 3H3, 3H4
GALLEY LEFT
DOOR C-1 14C, 19C, 21E, 13E AND 22C
C-2 17C, 20C, 21E, 14E AND 22C
C-3 18C, 21C, 21E, 15E AND 22C
1 DETERMINE POSITION OF CARGO DOOR SAFETY STOP. IS SAFETY STOP IN LOCKED OR NOT LOCKED POSITION?
LOCKED
3 REFER TO CARGO DOOR WARNING LIGHT FAULT ISOLATION (MM 52-71-00, FIGURE 104 (SHEET 2) BLOCK 4)
NOT LOCKED
2 CHECK SAFETY STOP AND SAFETY STOP PUSH-PULL CONTROL FOR FREEDOM OF MOTION AND CONDITION. ARE SAFETY STOP AND PUSH-PULL CONTROL OK?
NO
4 CORRECT ONE OR MORE OF THE FOLLOWING: FREE UP AND LUBRICATE SAFETY STOP PIVOT BEARINGS. REPLACE DEFECTIVE SAFETY STOP FLEXIBLE CONTROL (MM52-31-10). IF SAFETY STOP STRIKES STRIKER FITTING OR EQUIVALENT STRUCTURE, CHECK FOR OBSTRUCTION BELOW DOOR, OR CORRECT DOOR RIG (MM 52-34-00, ADJUSTMENT AND TEST)
YES
5 REPLACE LOCK ACTUATOR (MM 52-31-03)

M1-45402-52-406

Lock Actuator (green) Indicating Light On With Door Not Locked (Door Warning Light On)
Figure 109

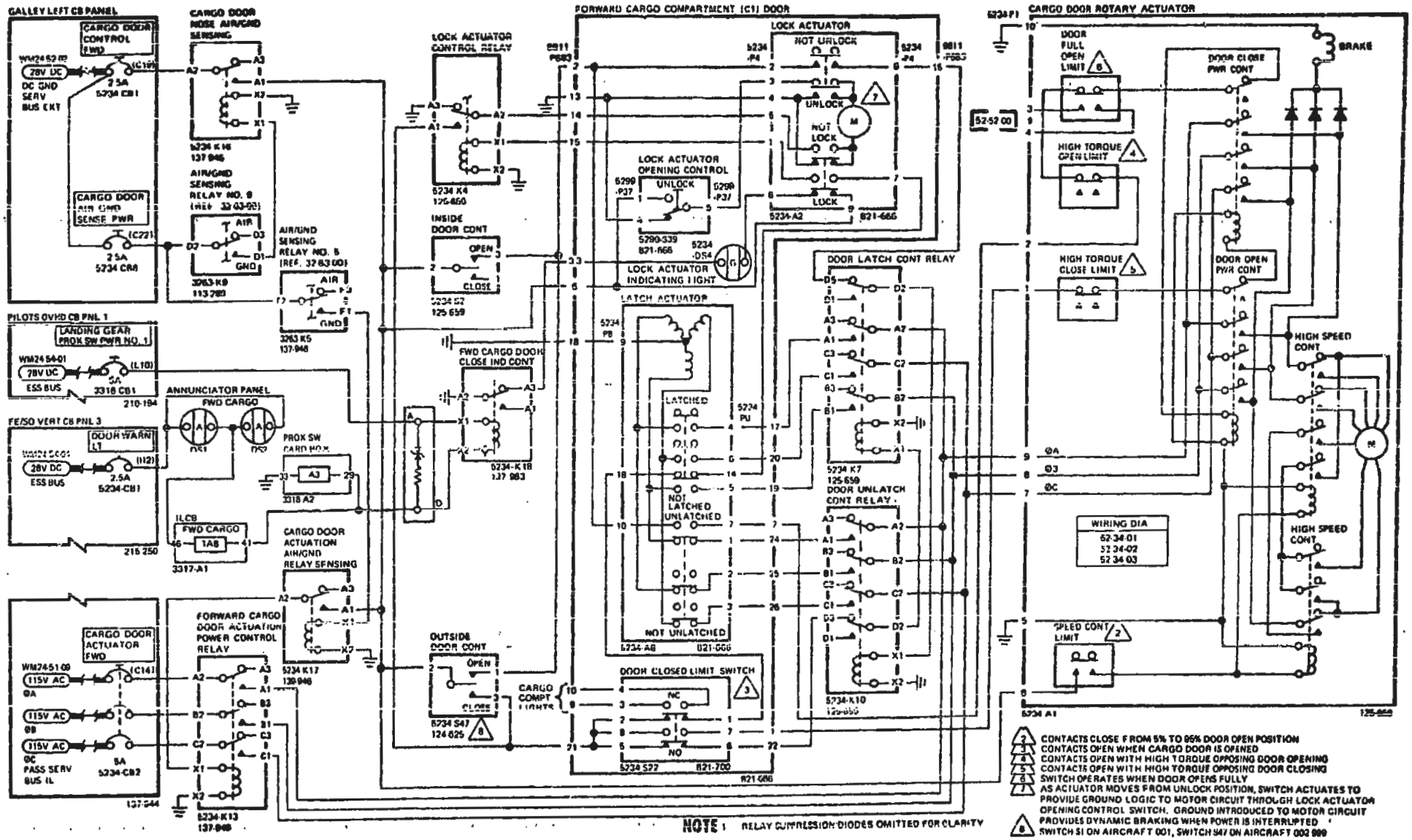
PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CB'S: 1L10, 1L11
2U8
2H2, 2H3, 2H4
GALLEY LEFT
DOOR C-1 14C, 18C, 21E, 13E, AND 22C
C-2 17C, 20C, 21E, 14E, AND 22C
C-3 18D, 21C, 21E, 15E, AND 22C

LOCK ACTUATOR (GREEN) INDICATING LIGHT OUT WITH DOOR LOCKED (DOOR WARNING LIGHT OUT)


1 REPLACE LOCK ACTUATOR INDICATING LIGHT BULB. DOES LIGHT OPERATE OK?
YES
4 REJECT FAULTY LIGHT BULB.
NO
2 CHECK LOCK ACTUATOR PART NUMBER AND VERIFY THAT ACTUATOR INSTALLATION IS CORRECT (MM52-31-03). IS ACTUATOR INSTALLATION OK?
NO
5 REINSTALL LOCK ACTUATOR CORRECTLY (MM52-31-03).
YES
3 WITH LOCK ACTUATOR IN LOCKED POSITION, DISCONNECT ELECTRICAL CONNECTOR AND CHECK FOR CONTINUITY BETWEEN PINS 8 AND 9 (WM52-34-01, 02, 03). IS CONTINUITY CHECK OK?
NO
6 REPLACE LOCK ACTUATOR (MM52-31-03).
YES
7 CHECK LOCK ACTUATOR CIRCUIT (WM52-34-01, 02, 03).

M1-454U2-52-405

Lock Actuator (green) Indicating Light Out With Door Locked
(Door Warning Light Out)
Figure 110

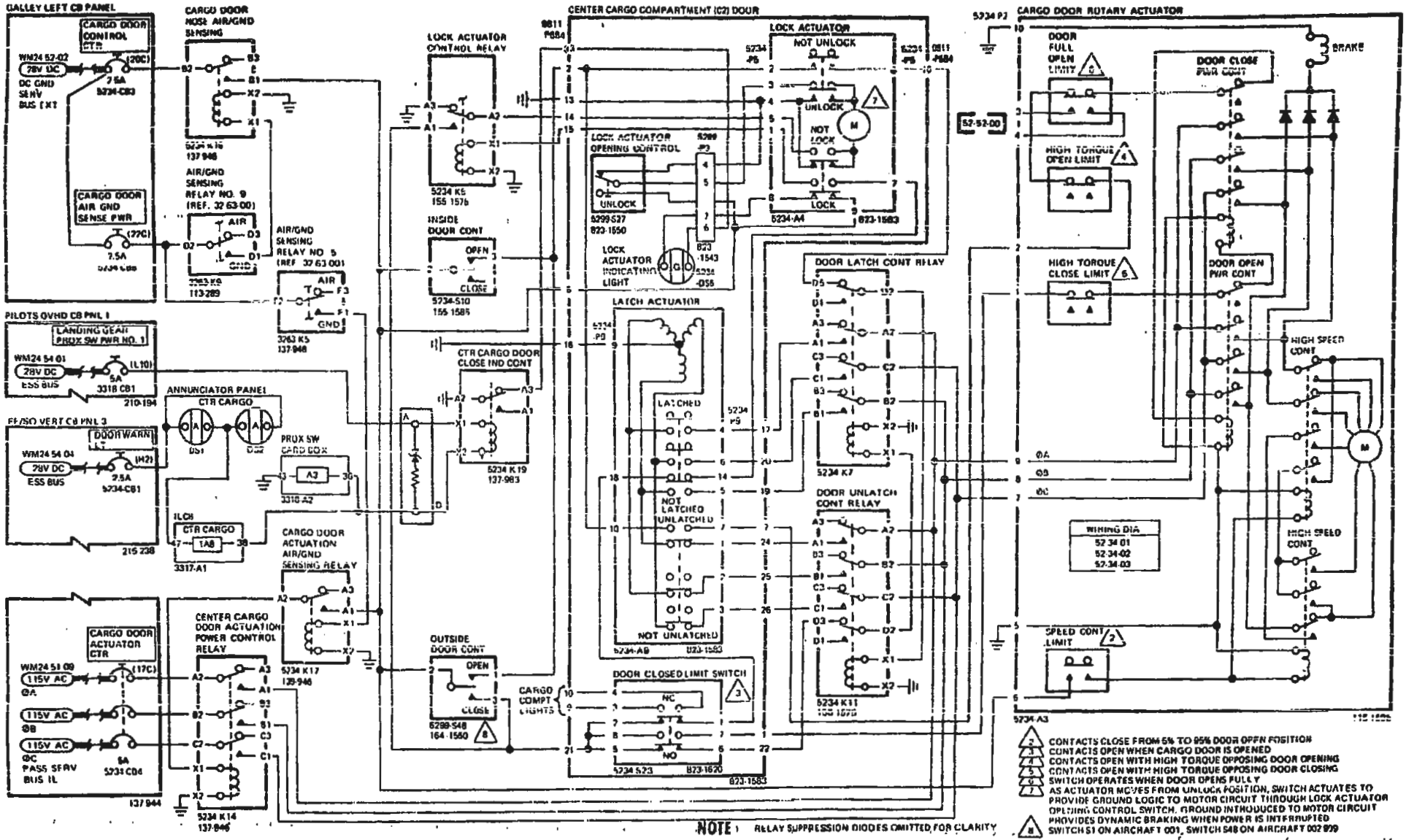


EM1-0001-52-968

C-1 Cargo Door Electrical Schematic
SCHEM 1

EFFECTIVITY: ALL

001B

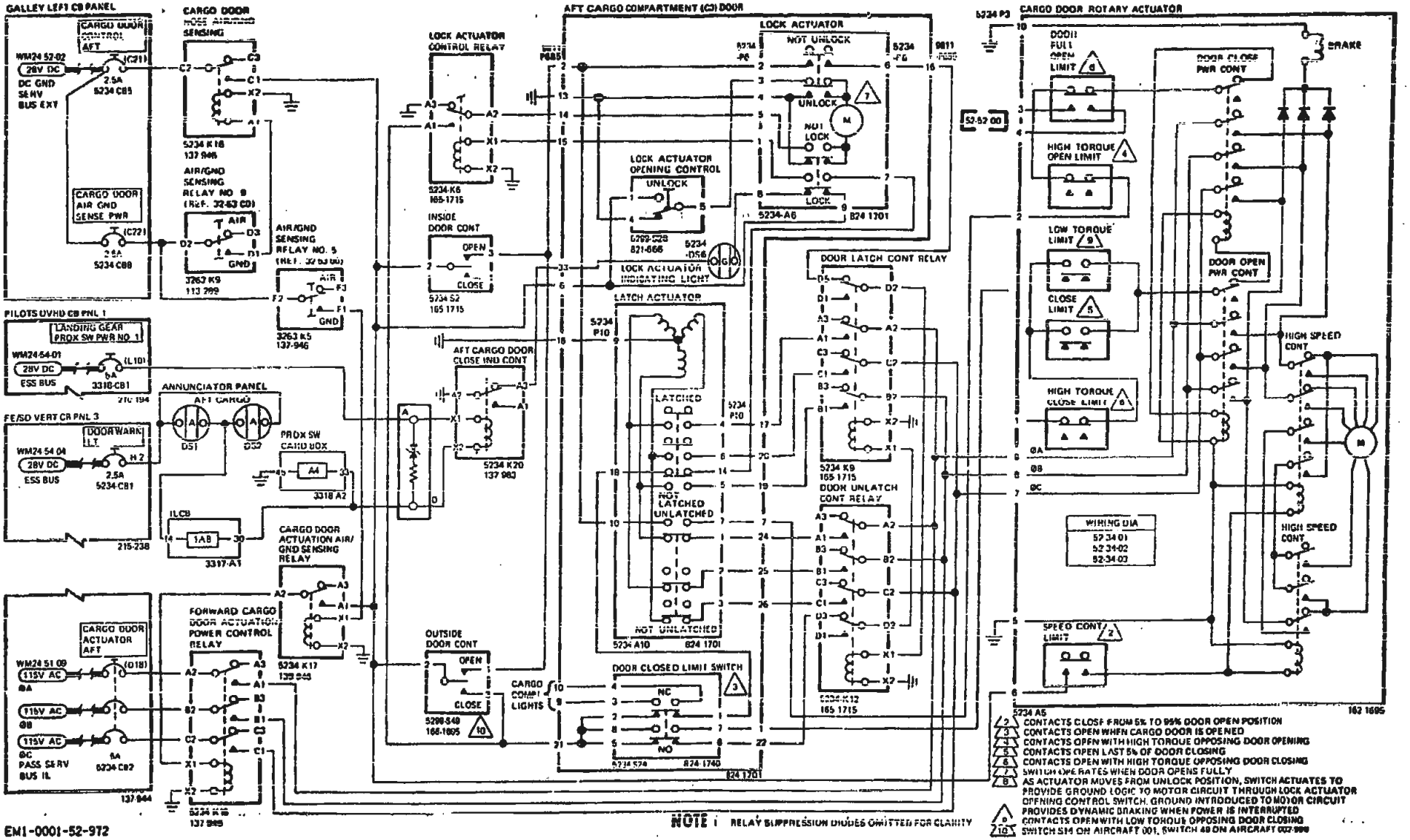


EM1-0002-52-970

R C-2 Cargo Door Electrical Schematic
R SCHEM 2

EFFECTIVITY: ALL

001B



R C-3 Cargo Door Electrical Schematic
R SCHEM 3

EFFECTIVITY: ALL

001B

CARGO DOOR ACTUATION SYSTEM - MAINTENANCE PRACTICES

1. Maintenance Practices

The procedures contained herein cover two distinct conditions as follows:

A. Deactivation, Paragraph 3, outlines the procedures required to electrically deactivate the cargo doors. These procedures may be used when a malfunction has occurred in the door electrical actuation system, and it has been determined that the door mechanical system is safe.

NOTE: This deactivation procedure applies only when an aircraft is to be dispatched in accordance with the MEL.

B. Cargo Door Opening Procedures, Manual Alternate, Paragraph 4, outlines alternate procedures for opening a cargo door when the normal electrical or normal manual procedure fails.

R C. Cargo Door Closing Procedures, Manual Alternate, Paragraph
R 5, outlines manual latching and locking procedures for cargo
R door when normal electrical procedure fails.

CAUTION: DOOR OPERATION IS LIMITED TO FOUR COMPLETE OPEN/CLOSE CYCLES WITHOUT PAUSE. AFTER THE FOURTH SUCH CYCLE, THE LIFT ACTUATOR SHOULD BE ALLOWED TO COOL FOR TWENTY MINUTES BEFORE RECYCLING THE DOOR.

NOTE: To facilitate removal of the cargo door exterior access plates, attaching panhead screws NAS 5203U and NAS 5204U can be replaced by hex-head bolts NAS 6403U and NAS 6404U in lengths equal to replaced screws.

C-2 Cargo door fairing fasteners NAS 4603U, and finishing washers LS 13013A can be replaced by NAS 6403U bolts with AN 960C washers. Bolt length must be equal to replaced fastener.

2. Referenced Procedures

20-51-04	Environmental Sealing of Model L-1011 Airplane
24-00-00	Electrical Power - Maintenance Practices
25-21-00	Passenger Compartment Seats - Description and Operation

25-25-05	Carpet Section - Removal and Installation
25-25-09	Movable Class Partition - Removal and Installation
25-51-14	Bulkhead Blowout Panels - Removal and Installation
52-31-01	Cargo Compartment Doors (C-1, C-2, and C-3) - Removal and Installation
52-31-03	Cargo Door Lock Actuator - Removal and Installation
52-31-08	Cargo Door Latching Actuator - Removal and Installation
52-34-00	Cargo Door Actuation System - Adjustment and Test
52-34-01	Cargo Door Lift Actuator - Removal and Installation
52-34-02	Gearbox (Powered Hinge) - Removal and Installation
52-34-05	Right Angle Drive Gearbox - Removal and Installation
52-34-13	Actuator Uplock Push-Pull Cable - Removal and Installation
52-71-00	Door Warning System - Adjustment and Test
52-71-00	Door Warning System - Maintenance Practices

3. Deactivation

A. General

This procedure outlines the steps necessary to deactivate a cargo door actuation system, when an electrical component of the actuation system has failed.

B. Cargo Door Actuation System Deactivation - Door Warning System Annunciator With Panel Lights Operational

WARNING: ANYTIME A CARGO DOOR IS CLOSED AND LOCKED, AND THE CARGO DOOR WARNING LIGHT ON THE FLIGHT ENGINEER/SECOND OFFICERS ANNUNCIATOR PANEL IS ON, THE SAFETY STOP AT THE TOP OF THE CARGO DOOR MUST BE VERIFIED FROM INSIDE THE AIRCRAFT FOR BEING IN THE FULL LOCKED POSITION.

R

NOTE: If Service Bulletin 52-105 is incorporated, the safety stop position can be checked through a view port from outside the aircraft.

(1) Verify that electrical power is on aircraft (Ref. 24-00-00).

(2) Verify that door warning system is operational (Ref. 52-71-00).

(3) Operate cargo door(s) to be deactivated to closed and locked position electrically and/or manually as required (Ref. 52-34-00) and observe the following:

(a) As each cargo door (C-1, C-2, or C-3) closes, latches, and locks, the appropriate door warning system light for each door (FWD CARGO, CTR CARGO, or AFT CARGO) on the Flight Engineer/Second Officers annunciator panel should turn off, as each door locks.

WARNING: IF CARGO DOOR IS CLOSED AND LOCKED, BUT ITS RESPECTIVE DOOR WARNING SYSTEM LIGHT ON THE FLIGHT ENGINEER/SECOND OFFICERS ANNUNCIATOR PANEL FAILS TO TURN OFF, REFER TO PARAGRAPH 3C.

(4) On galley left circuit breaker panel, zone 131, open and collar circuit breakers for cargo door actuation system to be deactivated as follows:

(a) C-1 Door

CARGO DOOR - ACTUATOR - FWD

CARGO DOOR - CONTROL - FWD

(b) C-2 Door

CARGO DOOR - ACTUATOR - CTR

CARGO DOOR - CONTROL - CTR

(c) C-3 door

CARGO DOOR - ACTUATOR - AFT

CARGO DOOR - CONTROL - AFT

(5) Make appropriate entry in aircraft log book.

(6) Install cargo door inoperative placard in flight station.

C. Cargo Door Actuation System Deactivation - Door Warning System Annunciator Panel Lights Not Operational (On or Off)

R WARNING: ANYTIME A CARGO DOOR IS CLOSED AND LOCKED, AND THE CARGO DOOR WARNING LIGHT ON THE FLIGHT ENGINEER/SECOND OFFICERS ANNUNCIATOR PANEL IS ON, THE SAFETY STOP AT THE TOP OF THE CARGO DOOR MUST BE VERIFIED FROM INSIDE THE AIRCRAFT FOR BEING IN THE FULL LOCKED POSITION.

(1) Close and lock cargo door(s) to be deactivated, electrically and/or manually, as required (Ref. Steps 3B(1) through 3B(6).

(2) If the door warning system annunciator light applicable for the cargo door being operated fails to turn off as the door locks, the cargo door locking safety stop must be verified from inside the aircraft for being in full locked position as follows:

CAUTION: THE CARGO DOOR WINDOW AT THE CENTER OF THE DOOR AND THE LOCK ACTUATOR INDICATOR (GREEN) LIGHT MUST NOT BE USED TO VERIFY DOOR LOCKED CONDITION.

(a) Verify that circuit breakers are open and collared [Ref. Step 3B(4)].

(b) At each cargo door requiring safety stop inspection, verify that door safety stop is in full locked position in accordance with following steps (Ref. Fig. 206).

C NOTE: Alternate access through the cargo pit bulkhead into the C1 and C2 containerized pits, is acceptable in lieu of the normal cheek area access as follows. The alternate access method cannot be utilized when the right-hand doorway container is installed. Alternate access may be useful in flight dispatch wherein door uplock position must be verified.

C (1) Remove right-hand decompression panel in bulkhead by pushing at top center of panel. Metal panel will pop out of retainer as tape releases (Ref. Maintenance Manual 25-51-14).

C (2) Panel must be reinstalled prior to flight as described in Maintenance Manual 25-51-14.

(3) Access to visually check safety stop on inboard side of C-3 door can be accomplished in two ways as follows:

(a) Enter passenger compartment and open access panel 272PB (Ref. Fig. 206) in floor at FS 1665 right side aisle. Enter C-3 cargo compartment, if possible, and verify that safety stop is in fully locked position (Ref. Fig. 206).

(b) Alternate method - Open C-2 door, gain access to right side cheek area aft of C-2 door (Ref. Fig. 204) by entering through pressure relief door, or by removing cheek access panel. Crawl aft through cheek area to aft pressure relief door. Push open pressure relief door or remove pressure relief valve assembly to gain access and verify that safety stop is in fully locked position.

(4) Access to verify safety stop position on inboard side of C-2 door can be accomplished as follows:

(a) Remove panel 162AR or 162CR in the C-3 compartment for access into the right side cheek area.

(b) Crawl forward through cheek area to FS 1625 bulkhead and remove blowout panel.

(c) To remove blowout panel (Ref. Fig. 208), remove pressure relief valve assembly for access to upper retainer nuts. Remove upper retainer. Remove inboard retainer to remove blowout panel.

(d) Gain access and verify that safety stop is in fully locked position (Ref. Fig. 206).

(5) Access to verify safety stop position on inboard side of C-1 door can be accomplished as follows:

(a) In galley compartment remove panel 132DR located forward of galley service door (Ref. Fig. 204).

(b) Crawl forward through cheek area to FS 703 bulkhead and remove blowout panel.

(c) To remove blowout panel (Ref. Fig. 209), remove pressure relief valve assembly for access to retainer nuts. Remove lower retainer. Remove outboard retainer to remove blowout panel.

(d) Gain access and verify that safety stop is in fully locked position (Ref. Fig. 206).

(6) After position of safety stop is verified to be in full locked position, replace access panels and pressure relief valve, if removed (Ref. Para. D).

(7) Make appropriate entry in aircraft log book.

(8) Install cargo door inoperative placard in flight station.

D. Component Replacement - Cargo Door Access

This procedure is performed with the cargo door (the one being verified as locked) closed, and with a workman in the right side cheek area aft of the FS 1625 bulkhead (C-2 door), or FS 703 bulkhead (C-1 door) (Ref. Figs. 207 and 208).

(1) Install cheek blowout panel as follows:

(a) Remove tape from forward surface of blowout panel.

NOTE: Do not remove the tape from around the edge of the blowout panel.

(b) At the FS 1625 bulkhead blowout panel, the pressure relief valve assembly must be removed to provide access for installation of the upper retainer attachment nuts.

(c) Place blowout panel in grooves of retainers not removed (Ref. Figs. 207 and 208).

(d) Install two remaining retainers using bolts and washers.

NOTE: The side retainer must be installed with the deep groove up.

(e) Adjust each retainer as required to clamp blowout panel firmly without deflection. Tighten all retainer attachment bolts.

NOTE: If required, the lower retainer may be adjusted to maintain equal spacing of blowout panel to structure at top and bottom.

(f) Apply 1.0 inch wide tape around aft sides of blowout panel, overlapping surround structure as indicated.

CAUTION: THIS TAPE INSTALLATION IS TEMPORARY IN NATURE, AND SHOULD BE REPLACED AT THE

EARLIEST CONVENIENCE WITH TAPE PROPERLY INSTALLED ON THE BLOWOUT PANEL FORWARD FACE (REF. MM25-51-14). THE TAPE IS REQUIRED TO MAINTAIN A CLASS D CARGO COMPARTMENT CONFIGURATION.

(g) Install pressure relief valve with flat door (forward opening door) on the bottom.

NOTE: The formed door (aft opening) should be on top.

(2) Install sidewall liner 162CR.

(3) Install air grille and protective tube assemblies.

4. Cargo Door Opening Procedures, Manual Alternate

A. General

The following procedures outline the steps required to open a cargo door, if the electrical system is inoperative, or if the normal manual opening procedure fails to open the door.

If a cargo door cannot be opened by electrical or normal manual procedure, failure of one or more of the following items may be the cause:

Latch actuator or lift actuator manual drive shafts

Manual drive gearbox

Latch actuator

Lock actuator

Lift actuator

Structural interference

Gearbox

B. Cargo Door Opening Malfunction

If a cargo door fails to open when operated electrically or manually, determine which of the following conditions apply:

(1) When door locking and latching actuators are operated electrically or manually, and door movement cannot be observed, proceed as follows:

(a) Refer to Paragraph 4C, Cargo Door Access, for door access information.

(b) Refer to Paragraph 4D, Cargo Door Locking Component Failure, for door locking component information.

(c) Refer to Paragraph 4E Cargo Door Latching Component Failure, for door latching component information.

(2) If a door can be unlocked and unlatched but cannot be opened electrically or manually, a lift actuator, gearbox, lift actuator manual drive flex shaft, or manual drive gearbox may have malfunctioned. A door blockage, caused by shifted cargo, is also a possibility. Proceed as follows:

(a) Refer to Paragraph 4F for cargo compartment access information.

(b) Refer to Paragraph 4G for cargo door opening component malfunction information.

(3) If door cannot be unlocked or unlatched after having tried procedures described in Paragraphs 4D, and 4E, proceed as follows:

(a) Refer to Paragraph 4F for cargo compartment access information.

(b) Refer to Paragraph 4G for cargo door manual alternate opening information.

C. Cargo Door Access

If a cargo door cannot be opened electrically or manually for access to cargo door components, cargo door exterior access plates (Ref. Fig. 201) can be removed for access to the lock actuator, latch actuator, safety stop push-pull mechanism, and to torque tube installation fittings. To remove access plates, proceed as follows:

(1) C-1 Cargo Door

(a) Remove screws from forward, center, and aft access plates on outboard side of door.

(b) Pry plates up for removal.

NOTE: Access plates are sealed to prevent air leakage.

(2) C-2 Cargo Door

CAUTION: DISCONNECT DOOR LOCK ACTUATOR INDICATOR LIGHT AT INTERFACE BETWEEN C-2 CARGO DOOR AND FAIRING BEFORE REMOVING FAIRING FROM C-2 DOOR.

(a) Remove screws that attach fairing to C-2 door.

(b) Move fairing slightly up and aft to permit access to inboard side of lock actuator indicator light connector.

(c) Disconnect indicator light and remove fairing.

(d) Remove screws from forward, center and aft access plates as required.

(e) Pry plates up for removal.

NOTE: Access plates are sealed to prevent air leakage.

(3) C-3 Cargo Door

(a) Remove screws from access plate on outboard side of door.

(b) Pry plate up for removal.

NOTE: Access plates are sealed to prevent air leakage.

(4) Install cargo door access plates after completion of maintenance.

(a) Clean and inspect access plates and mating surfaces of cargo door for damaged sealant.

(b) If sealant is damaged, clean area and apply sealant (Ref. 20-51-04.

(c) On C-2 door, connect cargo door lock actuator indicator light plug and install fairing with screws after cargo door access plates are installed.

D. Cargo Door Locking Component Failure

If the cargo door will not open when manually or electrically operated, visually check position of lever locking latch, and actuation crank. Proceed as follows:

(1) Remove access plates (Ref. Fig. 201).

(2) Tag cargo door controls.

(3) Observe position of lever locking latch (Ref. Fig. 202) relative to actuation crank assembly. If lever locking latch is in locked position, preventing rotation of actuation crank assembly, continue with Step (4). If lever locking latch is in unlocked position, allowing actuation crank assembly (and torque tube) to be rotated, refer to Paragraph 4E.

(4) Remove nut, washers, and bolt that join lock actuator to lever locking latch.

WARNING: ON AIRCRAFT 001-031 WITH SB52-122 AND 032-999, USE CAUTION WHEN MANUALLY OPERATING SAFETY STOP. THE SAFETY STOP ASSEMBLY WILL SNAP OVER WITH CONSIDERABLE FORCE IF THE SYSTEM IS OPERATED WHILE ANY JOINT BETWEEN SAFETY STOP DOOR LOCK ACTUATOR IS DISCONNECTED.

(5) On aircraft 001-031 without SB52-122, manually rotate lever locking latch as required to clear actuation crank assembly.

(5) On aircraft 001-031 with SB52-122 and 032-999 (pushrod operated safety stop), move lever locking latch clear of actuation crank assembly as follows:

(a) Pass a length of 1/8-inch diameter nylon cord, or equivalent, over lever locking latch, outboard of link fitting.

(b) Pull both ends of cord under torque tube then outboard through door access hole.

(c) Pull both ends of rope as required to actuate lever locking latch to unlatched position.

(d) Remove nylon cord.

NOTE: The safety stop actuation springs will snap over center and hold the lock mechanism in the unlocked position.

The lever locking latch must be clear of the actuation crank assembly to allow the crank assembly to be rotated.

(6) On aircraft 001-031 without SB52-122, restrain lever locking latch with wire, or equivalent, to prevent lever locking latch from moving back to locked position.

(7) Manually unlatch and open door (Ref. 52-34-00, Adjustment and Test), if condition of components permit.

(8) If door will not unlatch, refer to Paragraph 4E.

(9) Replace defective component.

(a) For failed door lock actuator, refer to 52-31-03, Removal and Installation.

(b) Replace failed manual override flexible shaft if damaged.

(10) If required, adjust and mate lock actuator shaft bearing with lever locking latch, and install bolt, washers, and nut (Ref. 52-31-03, Removal and Installation).

(11) Remove tags and check door for proper operation (Ref. 52-34-00, Adjustment and Test).

(12) Install access plates on door.

(13) If removed, install door liner on inside of door.

E. Cargo Door Latching Component Failure

If the cargo door can be unlocked electrically or manually but cannot be unlatched (moved out of plug position), the door latching actuator, or actuator manual override flexible shaft may be damaged. Proceed as follows:

(1) Remove cargo door access plates (Ref. Fig. 201).

(2) Tag cargo door controls.

(3) Remove nut, washers, and bolt that attach latch actuator to actuation crank assembly (Ref. Fig. 203).

NOTE: If bolt is difficult to remove from actuation crank, use wrench as described in Step 4E(4) to remove preload on bolt.

CAUTION: WHEN ATTEMPTING TO OPEN DOOR, CHECK THAT SKIN AT TOP OF DOOR IS NOT CAUGHT ON THE DOOR SURROUND TRIPLER SKIN.

(4) Using a 1-1/4 inch open-end wrench with wrench extension, engage hex-section of forward or aft latching mechanism lock-up cam. Move wrench up as far as possible.

NOTE: As an alternative to one of the above locations, an open-end wrench may be used on the flat surfaces of the actuation crank located above the latch actuator.

If door moves up slightly (less than 0.13 inch) and stops, safety stop at top of door may be in locked position, or door lifting mechanism may be jammed with an obstruction (Ref. Para. 4F).

If door moves up with movement of wrench, continue until wrench travel is limited by access opening. Using a second open end wrench with wrench extension, take up load on opposite latching mechanism lock-up cam. (The wrench must be used to hold door in unlatched position until the door can be moved outward and away from the pressure stops.)Remove first wrench and continue moving second wrench up until cargo door is unlatched (approximately 90 degrees rotation of torque tube).

NOTE: An alternative to the above method [Ref. Step (4)] of unlatching the door can be accomplished as follows:

(a) Remove center access plate only for access to actuation crank assembly located above the latch actuator.

(b) Using a 3/8-inch drive ratchet handle and 1-7/16-inch crowfoot wrench on the square surfaces of the actuation crank, rotate torque tube to raise door from latched position.

(c) If wrench requires repositioning a pry bar can be wedged below the door to support it while wrench is repositioned as required.

(5) Hold door in unlatched position with wrench and manually drive lift actuator until door is opened (one to two feet) at bottom of door.

(6) Relax load on wrench gradually and allow door to lower. Door will move downward.

(7) Continue operating cargo door toward open position with manual crank, until door is positioned as required for maintenance.

(8) Replace defective component.

(a) Failed door latching actuator, refer to 52-31-08, Removal and Installation.

(b) Replace failed manual override flexible shaft if damaged.

(9) If not already accomplished, adjust and mate the latch actuator shaft bearing with the actuation crank assembly, and install bolt, washers, and nut as described in 52-31-08, Removal and Installation.

(10) Remove tags and check door for proper operation (Ref. 52-34-00, Adjustment and Test.

(11) Install access plates.

F. Cargo Compartment Access - Alternatives

If, after using the procedures described in Paragraphs 4B thru 4E, the malfunctioning cargo door will not open, the following courses of action are available.

Entry can be made to a position aft of a C-1, or C-2 door through the fuselage right cheek area (Ref. Fig. 204). From this position, looking through a cargo compartment pressure relief door (blow-out panel), a workman can observe conditions on the inboard side of a door.

The pressure relief valve assembly can then be removed to enable removal of the blowout panel for access into the area. Access into the C-3 cargo compartment can be made by entry through a door in the passenger compartment floor.

A second means of access to the C-1 and C-2 door actuation components consists of removal of a passenger compartment floorboard over the affected cargo door. This action will allow access to components along the top of the inboard side of the doors.

(1) Gain access to interior side of cargo door through fuselage right cheek area (Ref. Fig. 204) as follows:

(a) Remove access panel 132DR in the galley compartment right side, forward of the galley door.

(b) Using protective padding to prevent damaging insulation, move forward into right cheek bay.

(c) Move forward to bulkhead panel and push open cargo compartment pressure relief door, or remove pressure relief valve assembly and observe cargo door with flashlight.

(d) Check for obvious damage, safety stop mechanism in extended position (which prevents unlatching of door), or door obstruction.

(e) If the situation warrants, remove blowout panel.

(2) Gain access to interior side of C-2 cargo door through fuselage right cheek area (Ref. Fig. 204) as follows:

(a) Remove access panel 162AR or 162CR in the aft cargo compartment right side, forward of C-3 door.

(b) Observe inboard side of C-2 door [Ref. Steps 4F(1)(b) thru 4F(1)(e)].

(3) Gain access to door opening components located above C-1 door as follows:

(a) Remove seats (Ref. 25-21-00) located over floorboards 242EB-1, 242EB or 242FB as required to gain access to safety-stop, lift actuator or gearboxes (Ref. Fig. 205).

(b) Remove class partition if positioned over applicable floorboard (Ref. 25-25-09).

(c) Remove carpet section over applicable floorboard (Ref. 25-25-05).

(d) Remove applicable floorboard as required.

(e) Proceed as described in Paragraph 4G.

(4) Gain access to door opening components located above C-2 door as follows:

(a) Remove passenger compartment seats (Ref. 25-21-00) positioned over floorboards 272FB-1, 272FB or 262FB-3 as required to gain access to safety stop, lift actuator or gearboxes (Ref. Fig. 205).

(b) Remove carpet section over applicable floorboard (Ref. 25-25-05).

(c) Remove applicable floorboard as required.

(d) Proceed as described in Paragraph 4G.

(5) Gain access to C-3 door opening components by entering cargo compartment as follows:

(a) Remove carpet over access door 272PB (in right aisle between FS 1665 and 1685).

(b) Open access door 272PB.

NOTE: It may be necessary to cut the mylar tape or remove tape strips to open access door.

(c) Proceed as described in Paragraph 4G.

G. Cargo Door Opening Component Malfunction

If all efforts to open a cargo door electrically or manually have failed, gain access to door opening components. Proceed as follows:

(1) Check for safety stop jamming at striker fitting and correct as follows:

(a) Check for clearance at safety stop.

(b) If safety stop is in contact with striker fitting, manually turn latch actuator knob clockwise (latching direction) to lower cargo door and clear safety stop.

(c) If latch actuator is inoperative, remove bolt, nut, and washer at upper rod end bearing of latch actuator to free latch actuator from torque tube actuation crank. This will allow cargo door to drop down sufficiently to free safety stop.

(d) If safety stop cannot be cleared, as described in Steps 4G(1)(a) thru 4G(1)(c) above, detach upper end fitting of safety stop push-pull cable (or upper end of push-rod) by removing bolt, nut, and washers (and spring, if present).

(e) With push-pull cable (or push-rod) detached, safety stop may be pulled down to unlocked position and secured with string or wire.

(2) Check for obvious jamming or blocking of door lifting mechanism. Remove obstruction as required to free lifting mechanism.

(3) If door is unlatched, and door appears to make a slight movement toward open, or closed position, determine

whether only one side of door lifting mechanism is operating to actuate door.

NOTE: If one side is jammed, disconnect torque shaft on that side. This may free door for intermittent (and hand assisted) electrical or manual operation.

(a) Disconnect or cut torque shaft which is engaged to malfunctioning gearbox. Disconnect shaft as described in Steps 4G(4)(a) thru 4G(4)(e).

(4) Disconnect lift actuator torque shafts as follows:

C NOTE: The recommended support for the door is a Nordco
C scissor lift, model 5008. Use of this lift
C will, if necessary, allow lowering or raising of
C the door with both torque shafts (drive shafts)
C disconnected.

C The door should rest on bags of oil-dry or other
C suitable material on the lift platform to
C protect the door from damage.

WARNING: WHEN LIFT ACTUATOR TORQUE SHAFTS ARE DISCONNECTED FROM GEARBOXES (OR CUT) THE DOOR IS FREE TO SWING OUTBOARD. RESTRAIN DOOR AND DO NOT STAND IN WAY.

CAUTION: IF EXCESSIVE FORCE IS REQUIRED TO DISENGAGE TORQUE SHAFTS, DAMAGE MAY OCCUR.

(a) Remove lift actuator torque shaft collars and disconnect torque shafts as described in 52-34-01, Removal and Installation.

(b) If torque shafts cannot be removed as described in Step 4G(4)(a), apply protective wrapping around shaft and grip torque shaft with vise grip pliers; then strike pliers with hammer.

NOTE: Move each shaft toward the lift actuator to disengage shaft from gearbox.

(c) If torque shafts cannot be disengaged, cut torque shafts.

NOTE: Torque shafts are high heat treat steel.

(d) With both lift actuator torque shafts disconnected from gearboxes, and with the door unlocked and unlatched, the door may be swung open manually.

NOTE: Door must be supported to remain in open position.

(e) Refer to Steps 4G(5)(a) thru 4G(5)(d) for component replacement references.

(5) Replace defective component.

(a) Failed lift actuator, refer to 52-34-01, Removal and Installation.

(b) Failed actuator manual drive flex shaft.

(c) Failed gearbox, refer to 52-34-02, Removal and Installation.

(d) Failed manual drive gearbox, refer to 52-34-05, Removal and Installation.

(6) After replacement of defective component, install lift actuator torque shafts (if not already done) as described in 52-34-01, Removal and Installation.

(7) Remove tags and check door for proper operation (Ref. 52-34-00, Adjustment and Test).

(8) Close access door to C-3 cargo compartment as follows:

(a) Close access door 272PB.

(b) Install tape around door.

(c) Install carpet (Ref. 25-25-05).

(9) Close floorboard access to C-2 door actuation mechanism as follows:

(a) Reinstall floorboards.

(b) Reinstall carpet section over floorboards (Ref. 25-25-05).

(c) Reinstall passenger compartment seats (Ref. 25-21-00) positioned over floorboards.

(10) Close floorboard access to C-1 door actuation mechanism as follows:

(a) Reinstall floorboards.

(b) Reinstall carpet section over floorboards (Ref. 25-25-05).

(c) Reinstall class partition, if removed (Ref. 25-25-09).

(d) Reinstall passenger compartment seats (Ref. 25-21-00) positioned over floorboards.

(11) If bulkhead panel was cut at either FS 703, or FS 1625, install new or repaired panel. Install cheek area blowout panels, if removed (Ref. 25-51-14).

(12) Install access panel 132DR in galley compartment, if removed for access to C-1 cargo compartment.

(13) Install access panel 162AR or 162CR if removed for access to C-2 cargo compartment.

5. Cargo Door Closing Procedures, Manual Alternate

A. General

The following procedures outline the steps required to close a cargo door if the normal electrical and external manual modes of door operation fail to latch and lock the door.

Before proceeding, be sure that the door is not being locked up by improper rig or operation of the lift actuator uplock push-pull cable (Ref 52-34-13); or that failure of door to latch is not caused by failure of door closed limit switch to actuate. This can be checked by pushing inboard firmly on lower aft corner of door while actuating door control switch to close.

B. Cargo Door Closing with Latching Component Malfunction

This procedure may be used when a cargo door will close when using electrical or manual systems, but will not latch.

R WARNING: THE LATCH ACTUATOR MUST BE OPERABLE EITHER
R ELECTRICALLY, OR BY USE OF THE MANUAL DRIVE, OR
R KNOB. IF NEITHER ELECTRICAL NOR MANUAL OPERATION
R IS POSSIBLE, LATCH ACTUATOR MUST BE REPLACED.

(1) Verify that safety stop at top of door is in unlocked position (tilted inboard).

(2) Electrically or manually operate door to limit of inboard travel, making sure that latching crank rollers and door rollers properly enter the lifting cam guides and upper and lower roller guides.

NOTE: On C-3 door, if rollers do not engage roller and cam guides, door may be "cocked". To correct temporarily, push up and aft on lower edge of door. To correct "cocked" condition, refer to Paragraph D, 52-31-01, Removal and Installation.

(3) On galley left circuit breaker panel, zone 131, open ACTUATOR and CONTROL circuit breakers for affected door before accomplishing any work on door.

(4) Remove cargo door access plates on outside of door (Ref. Fig. 201)

NOTE: On C-2 door, fairing must be removed for access to access plates.

(5) Verify that lock actuator is in unlocked position (extended), with lever locking latch away from actuation crank assembly.

WARNING: A LATCH ACTUATOR MUST BE OPERABLE ELECTRICALLY OR MANUALLY (INCLUDING OPERATION BY KNOB).

(6) Rotate latch actuator manual knob clockwise 130 turns, or until clutch slips, to move door to latched position.

(7) Manually operate lock actuator to lock cargo door.

(8) If cargo door locks manually, continue as follows:

(a) Verify operation of door warning lights for applicable door (Ref. 52-71-00).

(b) Install cargo door access plates removed in Step (3). On C-2 door, install fairing after installing access plates.

(c) Verify that ACTUATOR and CONTROL circuit breakers for affected door are open and collared.

(d) Make appropriate entry in aircraft log book, and install cargo door inoperative placard in flight station.

(9) If cargo door cannot be locked using manual provisions, refer to Paragraph 5C.

C. Cargo Door Closing with Locking Component Malfunction

WARNING: LOCKING COMPONENTS MUST OPERATE EITHER ELECTRICALLY, OR BY MANUAL OPERATION OF THE LOCK ACTUATOR KNOB.

This procedure may be used when a cargo door will close and latch using electrical or manual systems but will not lock.

(1) Operate door to closed and latched position using electrical or manual systems.

(2) On galley left circuit breaker panel, zone 131, open and collar ACTUATOR and CONTROL circuit breakers for affected door before accomplishing any work on door.

(3) Remove lock actuator access plate on door.

WARNING: A LOCK ACTUATOR MUST BE OPERABLE ELECTRICALLY, OR BY MANUAL OPERATION OF THE ACTUATOR KNOB.

(4) Reach into access hole and rotate lock actuator knob 12 turns counterclockwise, or until clutch slips, to lock door.

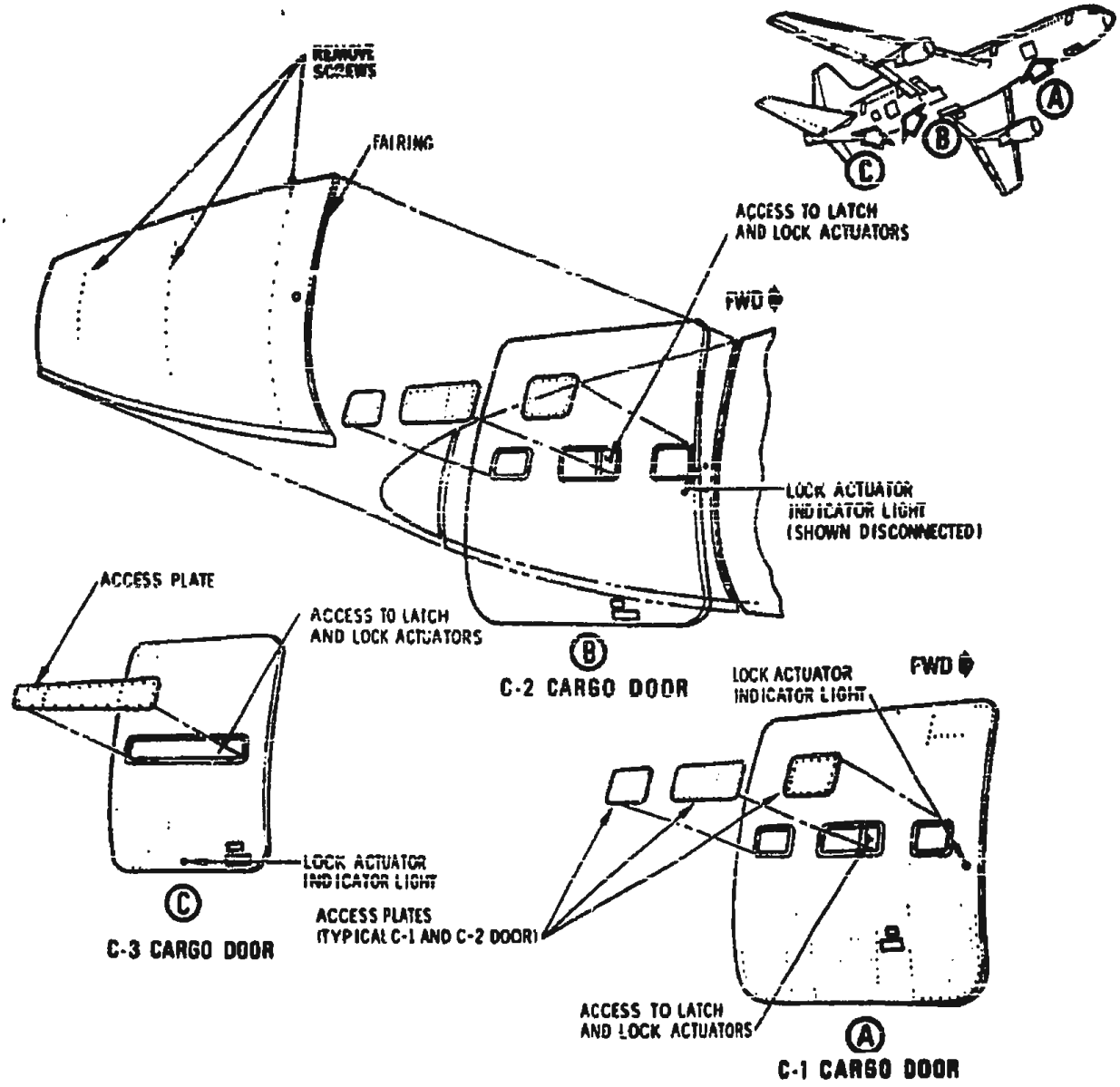
(5) In view port, observe that lever locking latch (upper finger) is in position over actuation crank (lower stop).

(6) Install lock actuator access plate removed in Step (3).

(7) With door closed, latched, and verify operation of door warning lights for applicable door (Ref. 52-71-00).

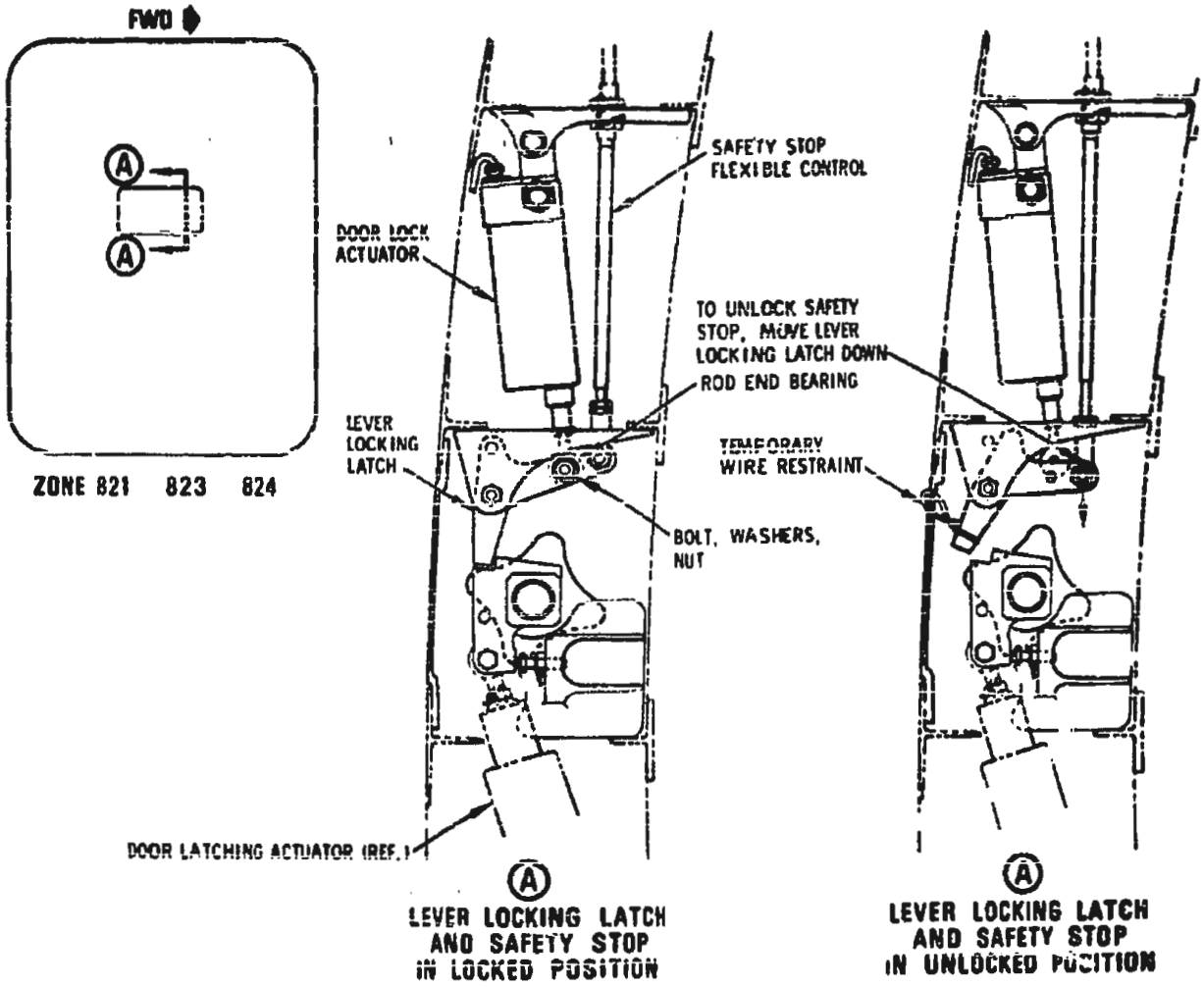
(8) If door warning light does not turn off, perform deactivation procedure as described in Paragraph 3C.

(9) Make appropriate entry in aircraft log book and install cargo door inoperative placard in flight station.



A1-45401-52-166

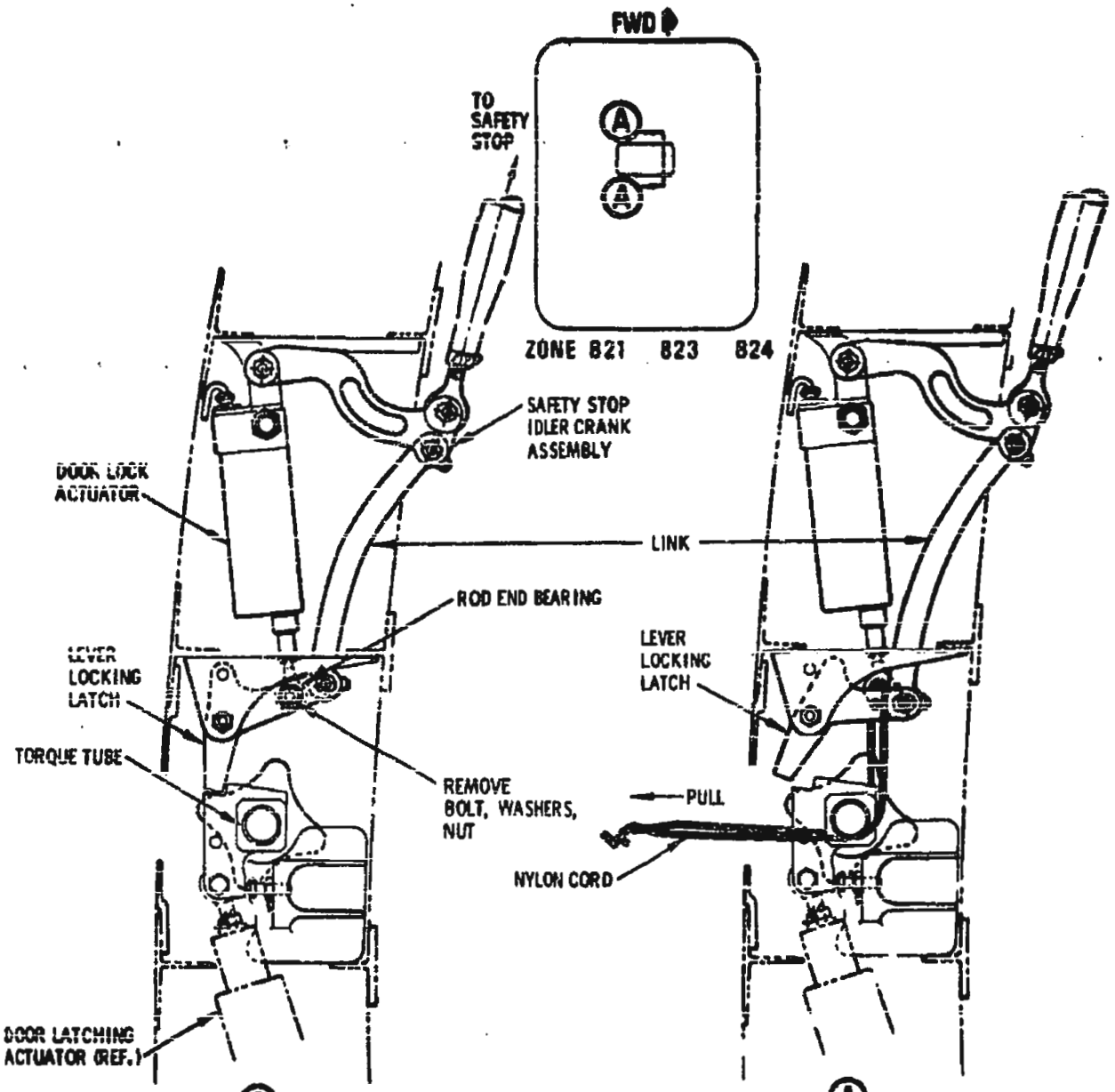
Cargo Door Access
Figure 201



HA 1879
M1-0100-52-109

Alternate Manual Unlocking of Cargo Door
Figure 202

R EFFECTIVITY: 001-031 WITHOUT SB52-122
R
001B

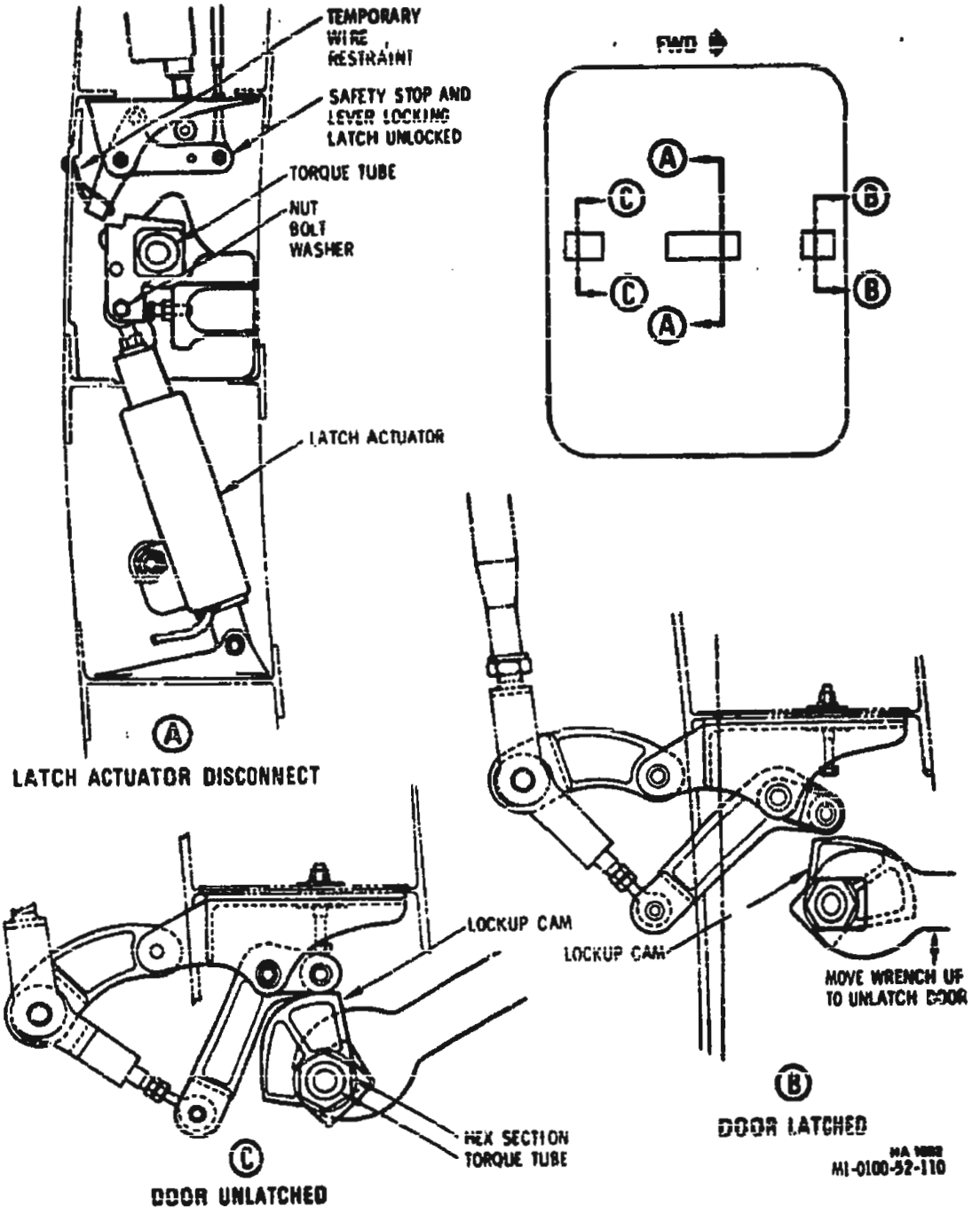


WARNING

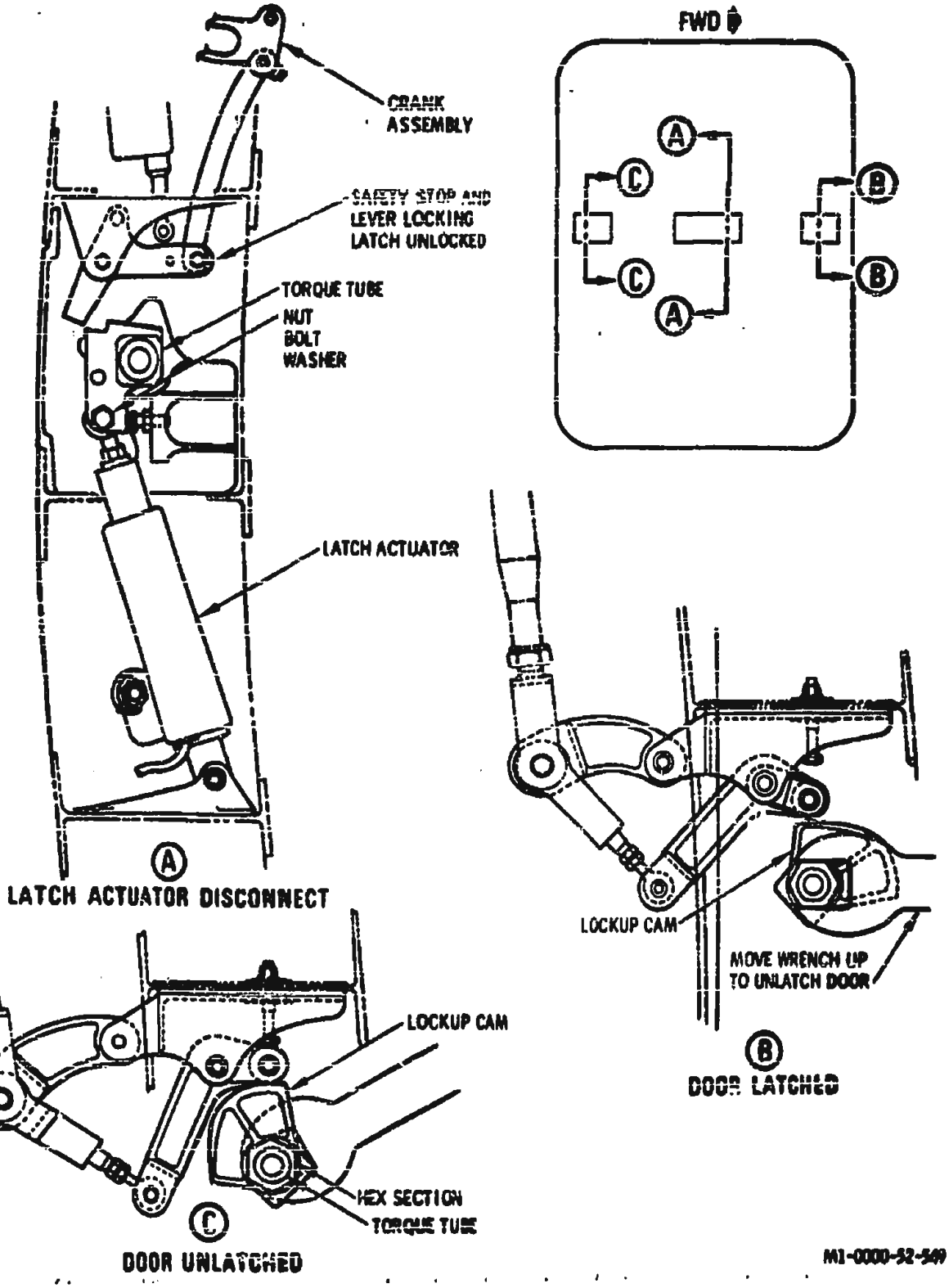
THE CRANK AND SAFETY STOP ASSEMBLIES WILL SNAP OVER WITH CONSIDERABLE FORCE IF SYSTEM IS OPERATED WHILE ANY JOINT BETWEEN SPRING AND DOOR LOCK ACTUATOR IS DISCONNECTED

M1-0000-52-948

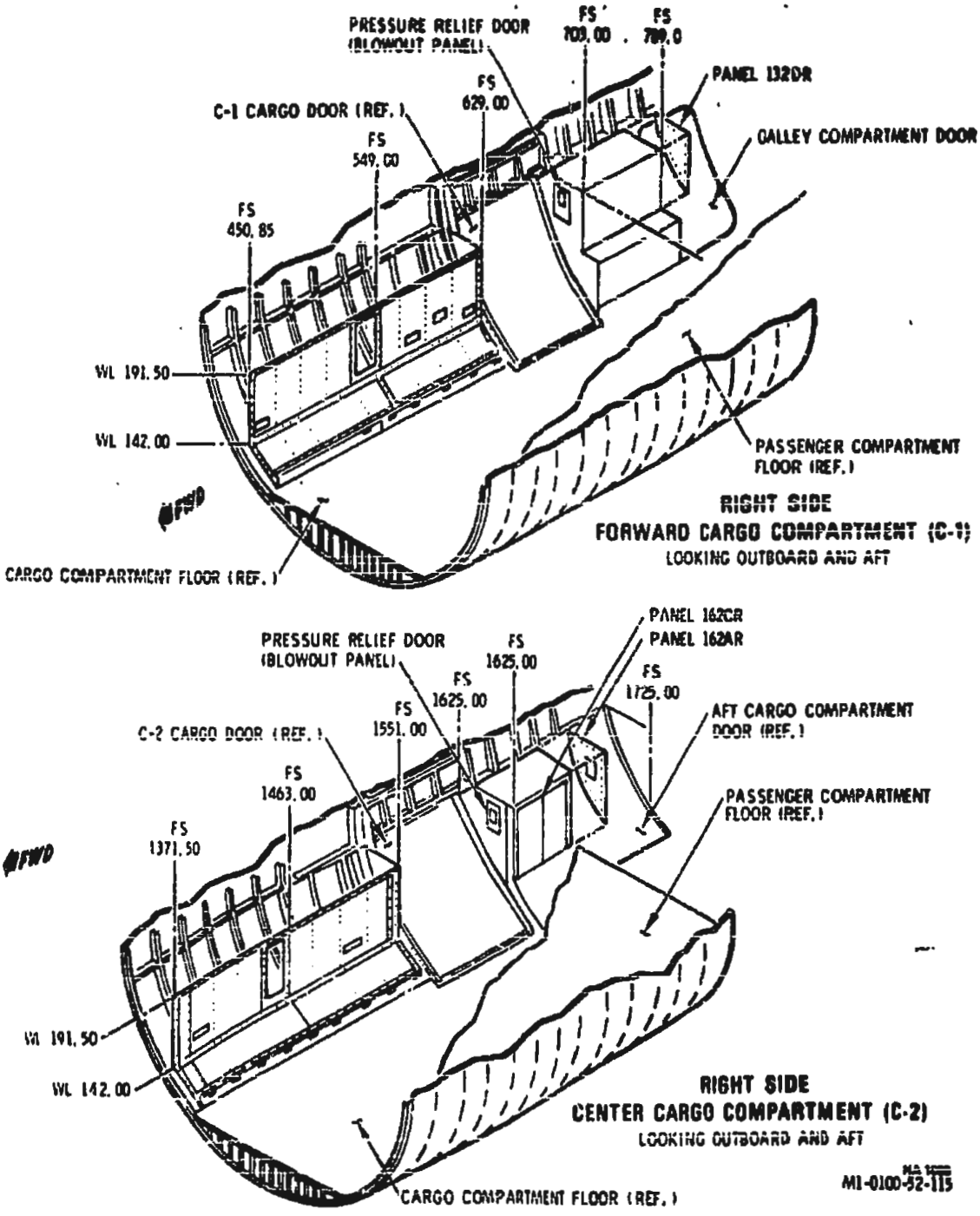
Alternate Manual Unlocking of Cargo Door
Figure 202



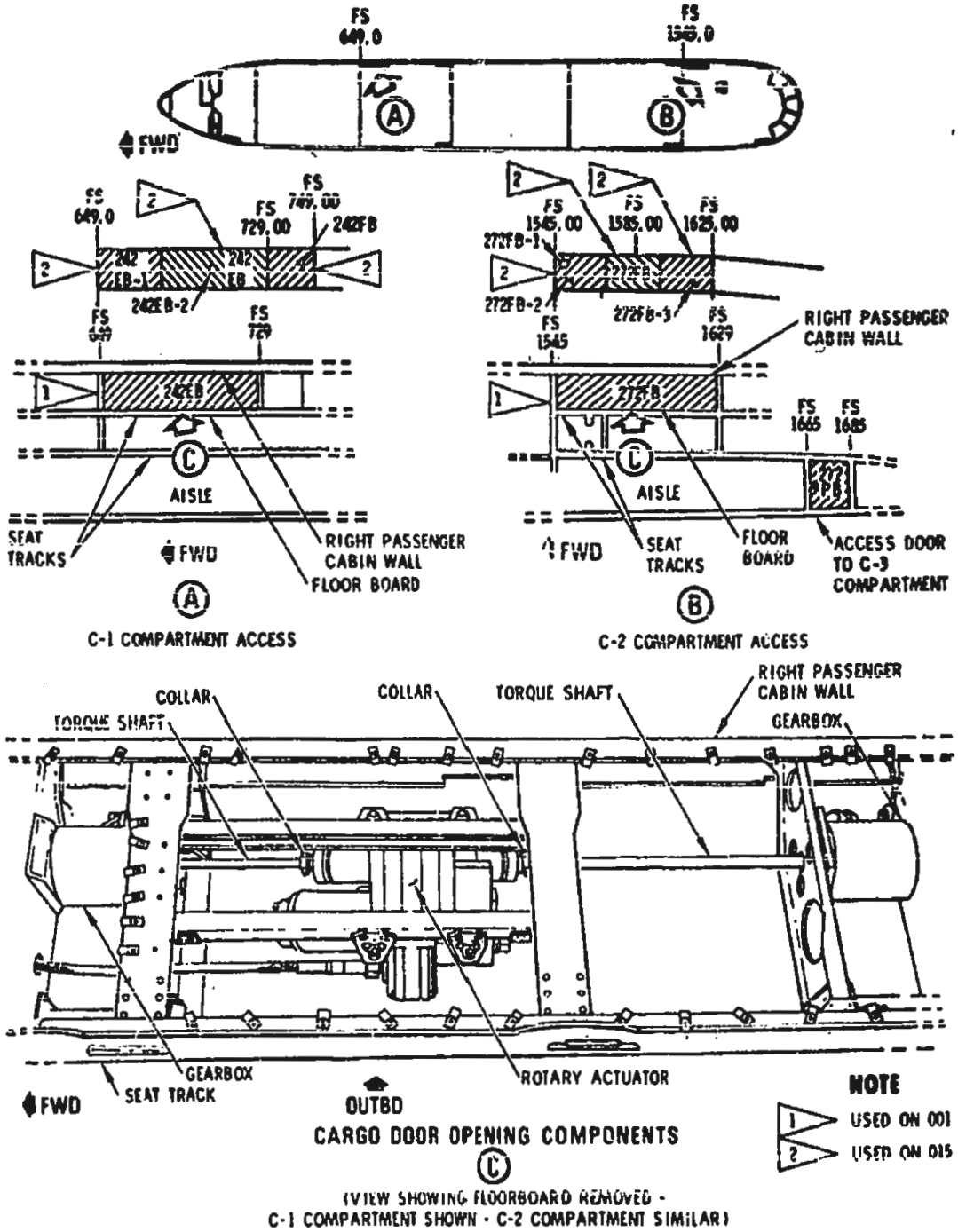
Alternate Manual Unlatching of Cargo Door
Figure 203



Alternate Manual Unlatching of Cargo Door
Figure 203



Access to Cargo Compartment - Pressure Relief Door Panel
Figure 204

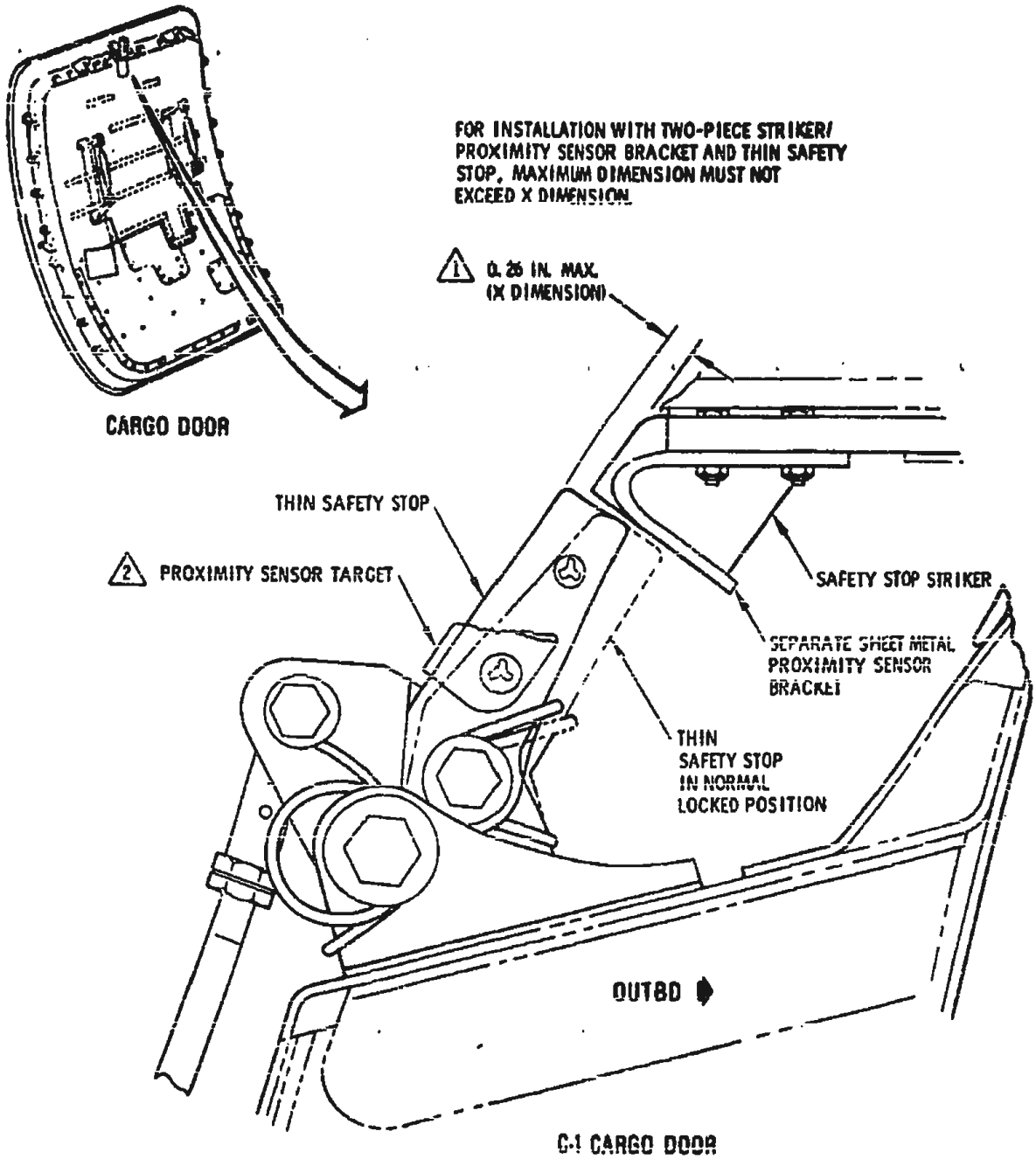


M1-0002-52-143

R Access to Cargo Door Opening Components - Floorboard
R Removal and Installation
R Figure 205

EFFECTIVITY: ALL

001B

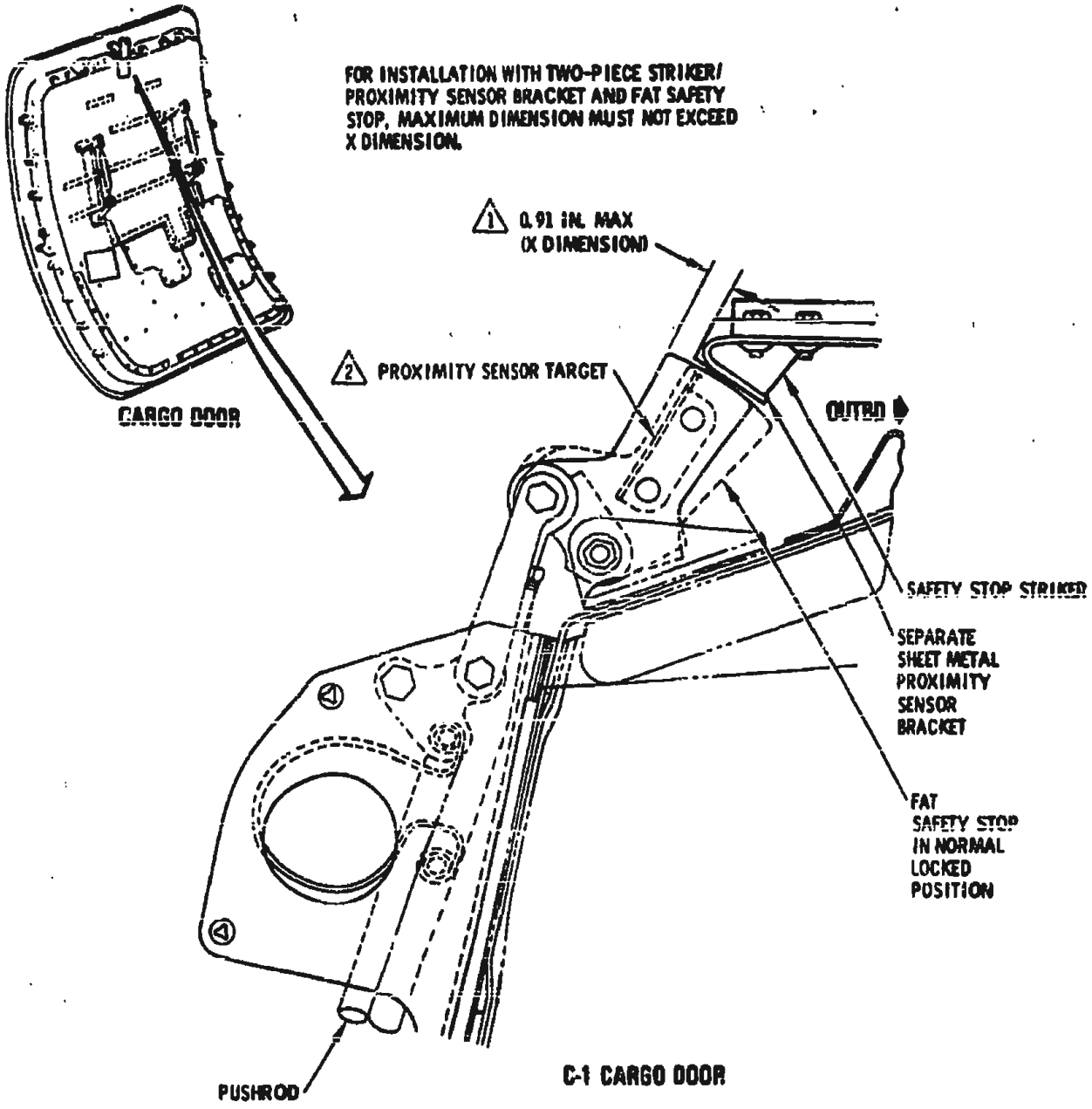

CARGO DOOR
FOR INSTALLATION WITH TWO-PIECE STRIKER/ PROXIMITY SENSOR BRACKET AND THIN SAFETY STOP, MAXIMUM DIMENSION MUST NOT EXCEED X DIMENSION.
1 0.26 IN. MAX. (X DIMENSION)
THIN SAFETY STOP
2 PROXIMITY SENSOR TARGET
SAFETY STOP STRIKER
SEPARATE SHEET METAL PROXIMITY SENSOR BRACKET
THIN SAFETY STOP IN NORMAL LOCKED POSITION
OUTBD
C-1 CARGO DOOR

NOTE

1. MAXIMUM INBOARD POSITION OF SAFETY STOP RELATIVE TO LOWER INBOARD CORNER OF SAFETY STOP STRIKER
2. PROXIMITY SENSOR AND TARGET REMOVED FOR CLARITY

MI-0001-52-540

R Cargo Door Safety Stop Inspection - Door Deactivation
R Figure 206 (Sheet 1)

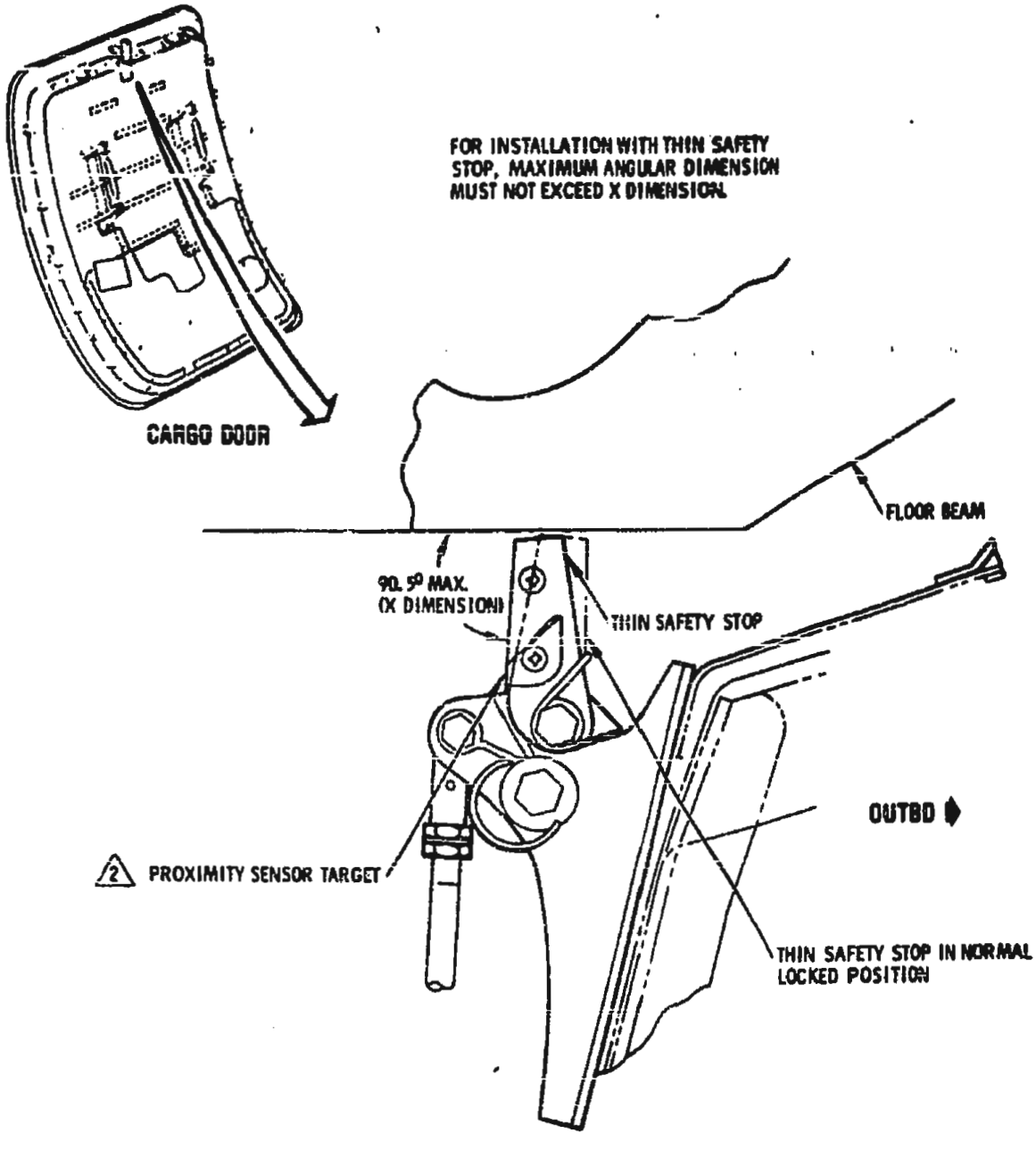

FOR INSTALLATION WITH TWO-PIECE STRIKER/ PROXIMITY SENSOR BRACKET AND FAT SAFETY STOP, MAXIMUM DIMENSION MUST NOT EXCEED X DIMENSION.
1 0.91 IN. MAX (X DIMENSION)
2 PROXIMITY SENSOR TARGET
CARGO DOOR
OUTBD
SAFETY STOP STRIKER
SEPARATE SHEET METAL PROXIMITY SENSOR BRACKET
FAT SAFETY STOP IN NORMAL LOCKED POSITION
PUSHROD
C-1 CARGO DOOR

NOTE

1. MAXIMUM INBOARD POSITION OF SAFETY STOP RELATIVE TO LOWER INBOARD CORNER OF SAFETY STOP STRIKER
2. PROXIMITY SENSOR AND TARGET REMOVED FOR CLARITY

M1-0001-52-[illegible]

Cargo Door Safety Stop Inspection - Door Deactivation
Figure 206 (Sheet 1)


CARGO DOOR
FOR INSTALLATION WITH THIN SAFETY STOP, MAXIMUM ANGULAR DIMENSION MUST NOT EXCEED X DIMENSION
FLOOR BEAM
90.5° MAX. (X DIMENSION)
THIN SAFETY STOP
OUTBD
2 PROXIMITY SENSOR TARGET
THIN SAFETY STOP IN NORMAL LOCKED POSITION

C-2 CARGO DOOR

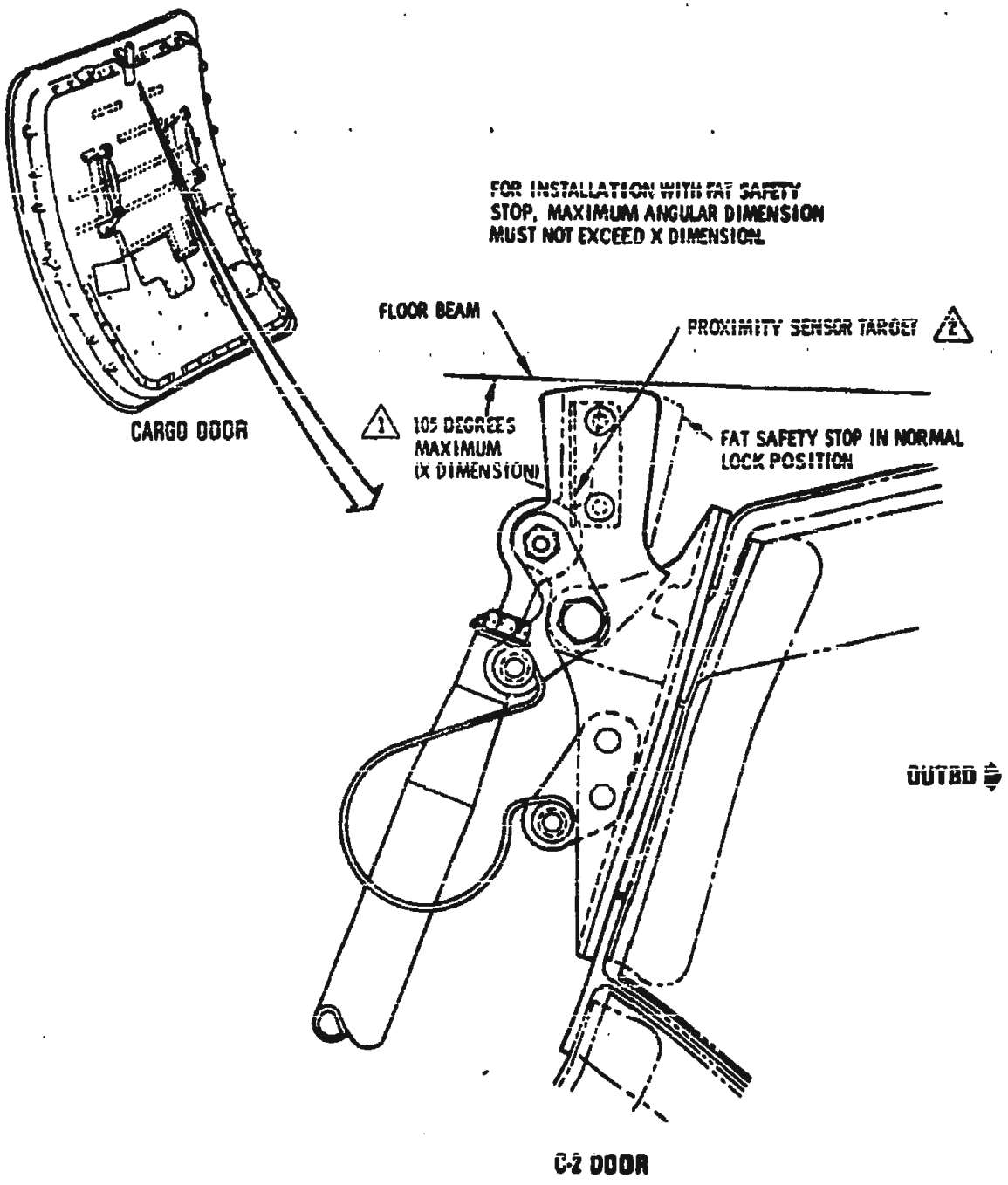
NOTE

1 MAXIMUM INBOARD POSITION OF SAFETY STOP RELATIVE TO LOWER SURFACE OF FLOOR BEAM

2 PROXIMITY SENSOR AND TARGET REMOVED FOR CLARITY

M1-0001-32-342

Cargo Door Safety Stop Inspection - Door Deactivation
Figure 206 (Sheet 2)



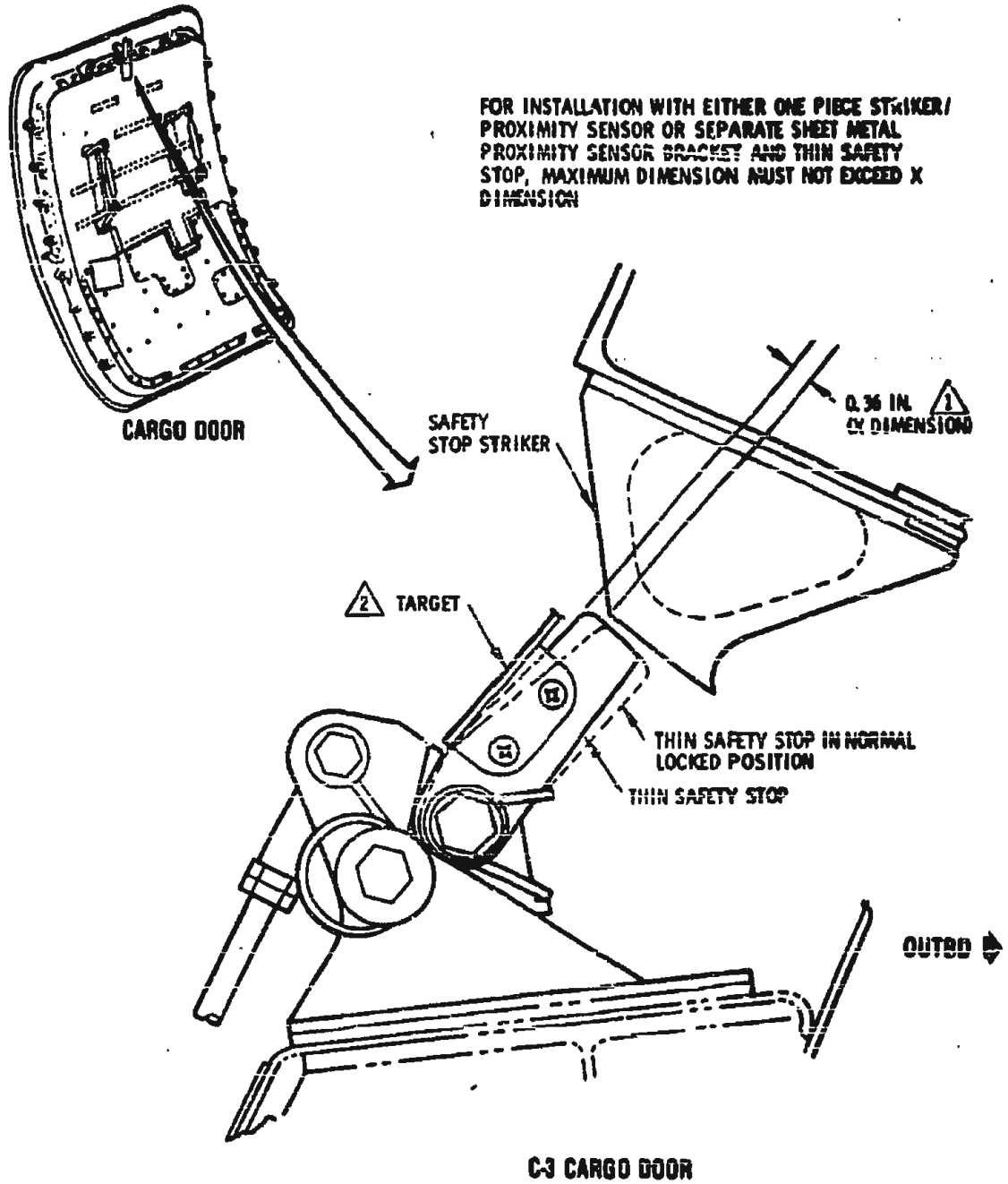
NOTE

1. MAXIMUM INBOARD POSITION OF SAFETY STOP RELATIVE TO LOWER SURFACE OF FLOOR BEAM

2. PROXIMITY SENSOR AND TARGET REMOVED FOR CLARITY

M1-0001-52-344

Cargo Door Safety Stop Inspection - Door Deactivation
Figure 206 (Sheet 2)


FOR INSTALLATION WITH EITHER ONE PIECE STRIKER/ PROXIMITY SENSOR OR SEPARATE SHEET METAL PROXIMITY SENSOR BRACKET AND THIN SAFETY STOP, MAXIMUM DIMENSION MUST NOT EXCEED X DIMENSION
CARGO DOOR
SAFETY STOP STRIKER
0.36 IN. (1) OF DIMENSION
(2) TARGET
THIN SAFETY STOP IN NORMAL LOCKED POSITION
THIN SAFETY STOP
OUTBD

C-3 CARGO DOOR

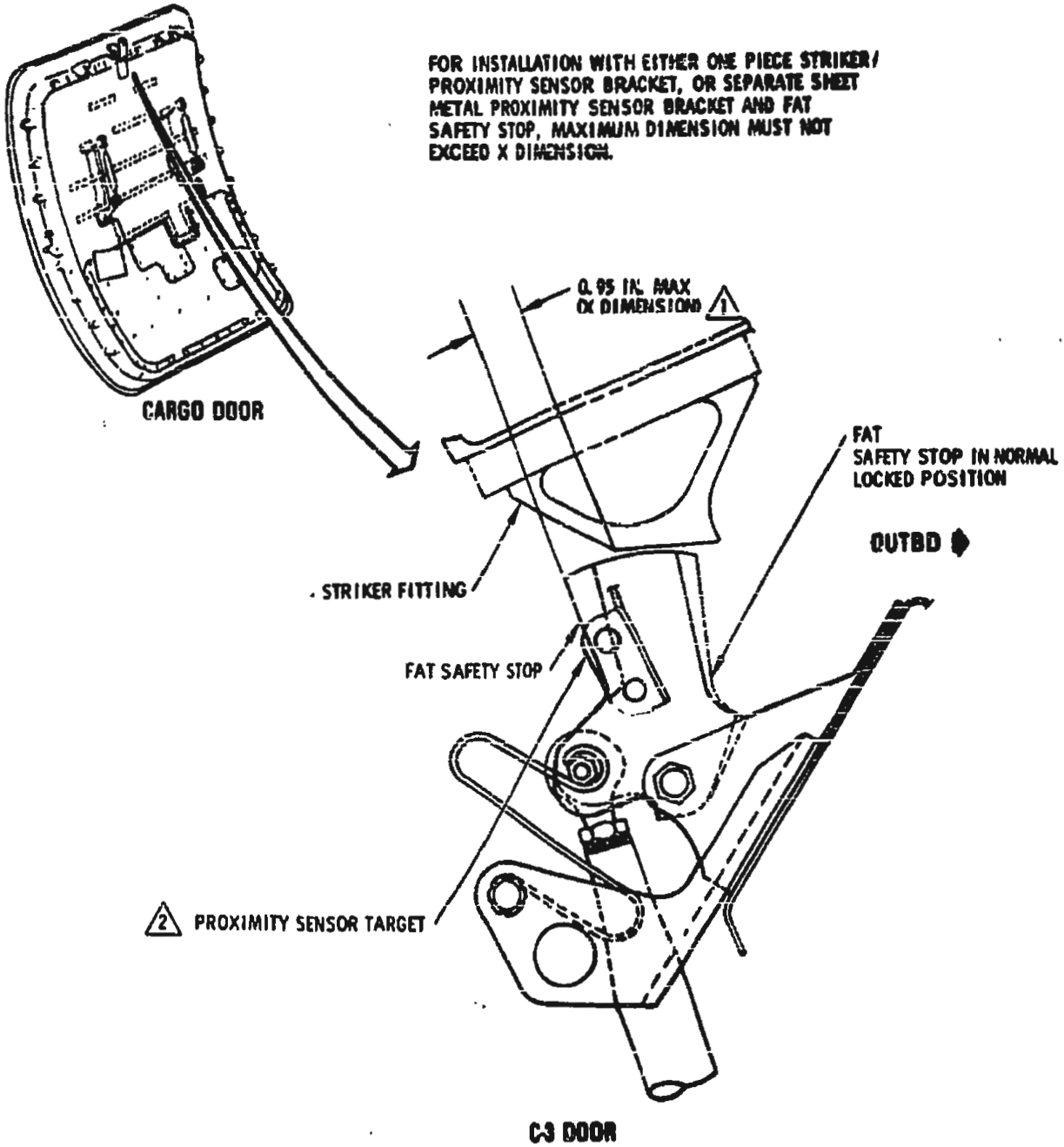
NOTE

(1) MAXIMUM INBOARD POSITION OF SAFETY STOP RELATIVE TO LOWER INBOARD CORNER OF SAFETY STOP STRIKER

(2) PROXIMITY SENSOR AND TARGET REMOVED FOR CLARITY

M1-0001-52-545

Cargo Door Safety Stop Inspection - Door Deactivation
Figure 206 (Sheet 3)

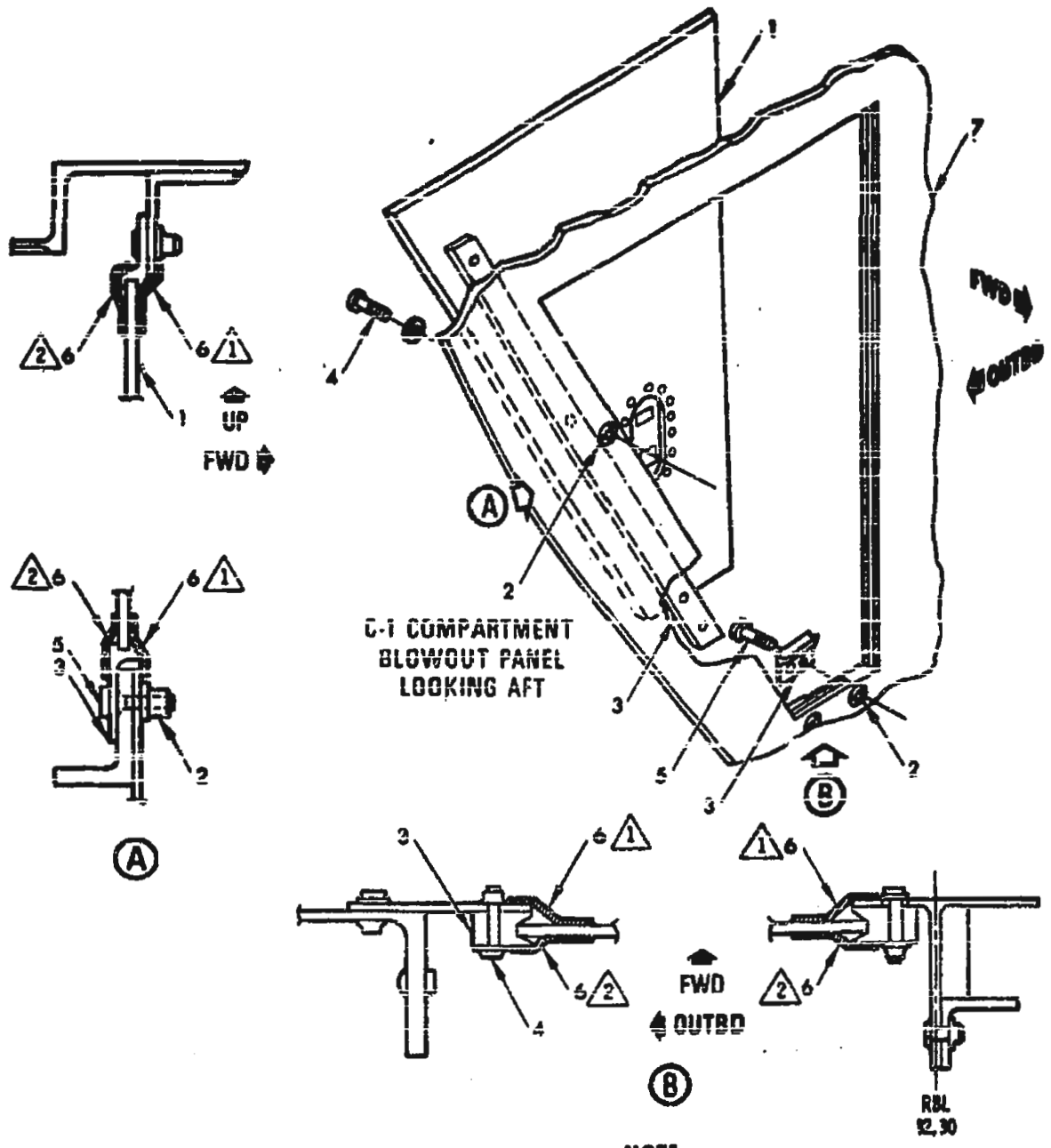

FOR INSTALLATION WITH EITHER ONE PIECE STRIKER/ PROXIMITY SENSOR BRACKET, OR SEPARATE SHEET METAL PROXIMITY SENSOR BRACKET AND FAT SAFETY STOP, MAXIMUM DIMENSION MUST NOT EXCEED X DIMENSION.
0.95 IN. MAX X DIMENSION
1
CARGO DOOR
FAT SAFETY STOP IN NORMAL LOCKED POSITION
OUTBD
STRIKER FITTING
FAT SAFETY STOP
2 PROXIMITY SENSOR TARGET
C-3 DOOR

NOTE

1. MAXIMUM INBOARD POSITION OF SAFETY STOP RELATIVE TO LOWER INBOARD CORNER OF SAFETY STOP STRIKER
2. PROXIMITY SENSOR AND TARGET REMOVED FOR CLARITY

Mi-0001-52-947

Cargo Door Safety Stop Inspection - Door Deactivation
Figure 206 (Sheet 3)



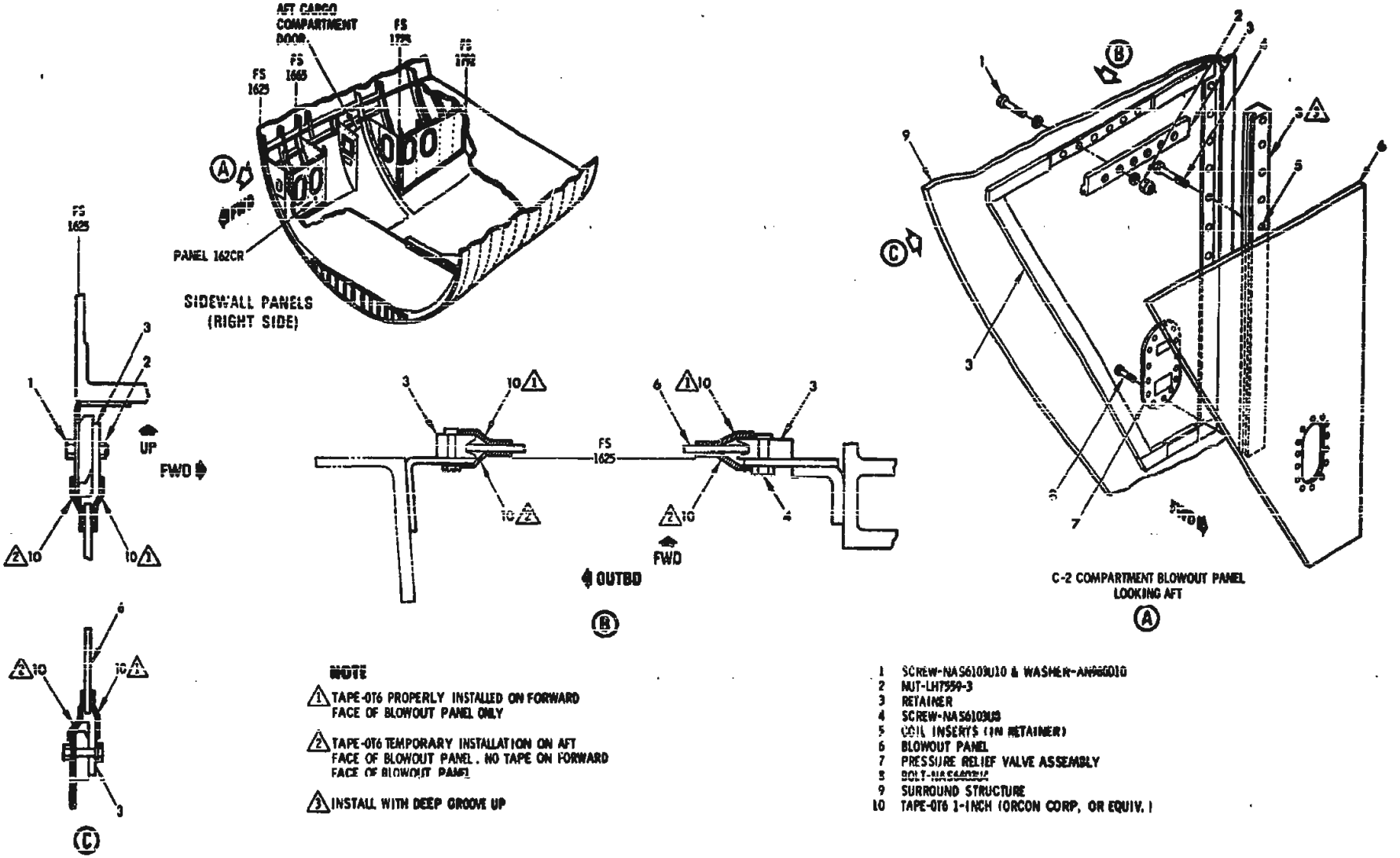
1 BLOWOUT PANEL
2 FLOATING PLATE NUT (TYP)
3 RETAINER
4 BOLT-NAS5203U7 & WASHER-AN960D10
5 BOLT-NAS5203U4 BOLT & WASHER-AN960D10
6 TAPE-016, 1-INCH (ORCON CORP, OR EQUIV)
7 SURROUND STRUCTURE

NOTE

1. TAPE-016 PROPERLY INSTALLED ON FORWARD FACE OF BLOWOUT PANEL ONLY
2. TAPE-016 TEMPORARY INSTALLATION ON AFT FACE OF BLOWOUT PANEL. NO TAPE ON FORWARD FACE OF BLOWOUT PANEL

M1-[illegible]

C-1 Cargo Door Access - Decompression Modification
Figure 207



NOTE

1. TAPE-0T6 PROPERLY INSTALLED ON FORWARD FACE OF BLOWOUT PANEL ONLY
2. TAPE-0T6 TEMPORARY INSTALLATION ON AFT FACE OF BLOWOUT PANEL. NO TAPE ON FORWARD FACE OF BLOWOUT PANEL
3. INSTALL WITH DEEP GROOVE UP

1 SCREW-NAS6103U10 & WASHER-AN960D10
2 NUT-LH7550-3
3 RETAINER
4 SCREW-NAS6103U3
5 COIL INSERTS (IN RETAINER)
6 BLOWOUT PANEL
7 PRESSURE RELIEF VALVE ASSEMBLY
8 BOLT-NAS6203U3
9 SURROUND STRUCTURE
10 TAPE-0T6 1-INCH (ORCON CORP, OR EQUIV.)

MI-45400-52-481

C-2 Cargo Door Access - Decompression Modification
Figure 208

C 6. Operating Mechanism Rig Check

C A. The procedures for each door are identical except as noted. The procedures must be performed in the sequence shown to obtain correct rigging of the operating mechanism.

C WARNING: CARE MUST BE EXERCISED WHILE MAINTENANCE IS PERFORMED ON THE CARGO DOOR WITH ELECTRICAL POWER ON THE DOOR OPERATING CIRCUIT.

CR B. Remove door liner and access panels.

CR (1) Remove door upper liner and access panels from lower hard liner.

CR (2) Remove and save circular access plate from door outer skin at lock actuators to allow communication between personnel working in the closed cargo compartment and personnel working outside the door.

CR (3) Check condition of seal and lanyard at access plate.

C C. Door Surround Structure Cleanness Check

C (1) Remove all compacted or loose debris from sill area including forward and aft corners. Remove dirt or debris from areas above and below door lower pressure seal and retainer, and from lower pressure stop brackets.

C (2) Clean out sill area drains holes.

CR (3) Clean out upper and lower roller guides and latching roller guides at fwd and aft sides of doorway.

C D. Pressure Seal Check

C (1) Check pressure seal and seal retainer all around door opening for misalignment or other damage and make corrections as necessary (reference 52-31-05).

C NOTE: Seal misalignment (waviness) can cause door to hang up during closing operation. A seal retainer displaced outboard may physically prevent a door from latching fully, and can cause pressurization leaks.

CR (2) Check installation of keeper screws through foot of CR pressure seal at upper fwd and aft corners of doorway.

C E. Check condition of safety stop push-pull cable as follows:

CR NOTE: Not applicable to aircraft 11002, 11014, and 31032
CR thru 31036. Proceed to step F.

CR (1) Position one man in cargo compartment and establish
CR communications with personnel outside of cargo door.

CR (2) Electrically close, latch and lock cargo door.

CR (3) Check safety stop push-pull cable as follows.

CR (a) Remove bolt from lower end of push-pull cable at
CR lever locking latch. Do not change any adjustment
CR on cable.

CR (b) Pull cable down toward unlock position and check
CR that it operates freely and will spring return to
CR lock position.

CR (c) If cable does not return to lock position,
CR determine cause and repair accordingly.

CR (d) Check condition of cable lower rod end bearing to
CR assure it is not frozen. If bearing is damaged,
CR change the cable assembly.

CR (e) Reinstall bolt and nut at lower end of push-pull
C cable to lever locking latch and complete
C installation.

C F. Perform "Safety Stop Locked Position" check per 52-30-19
C Adjustment/Test, 4.A. Steps (2) thru (8).

CR G. With door closed and safety stop finger in locked position,
CR check clearance between finger and striker at C-1 or C-3
CR doors and between finger and floor beam at C-2 door.
CR Clearance should be .100 inch to .150 inch.

CR (1) If this dimension is incorrect, perform "Safety Stop
CR Clearance Adjustment" check per Chapter/Section
CR 52-30-19 Adj/Test 4.B.(2) through (8).

CR H. With lock actuator fully retracted and rig pin installed at
CR lever locking latch, check gap between proximity sensor and
CR target is .100 inch to .150 inch. If necessary, adjust gap
CR by repositioning the sensor. Do not adjust the length of
CR the safety stop flex cable. This is a preliminary setting.
CR Final setting is performed in paragraph J. Remove rig pin.

C I. Open and tag the actuator and control circuit breakers.
C Unlock door from inside and perform Operation Test-Manual
C Mode from outside aircraft per 52-34-00 Adjustment/Test,
C 4.D. Steps (3) thru (6). When checking uplock operation,

C gain access to lower end of uplock operating cable at
C control switchbox and check condition of roll pin attaching
C cable to arm on switchbox door hinge.

C CAUTION: AFTER CHECKING THE UPLOCK, ENSURE THE DOOR IS
C MANUALLY CRANKED FULLY OPEN AGAIN BEFORE
C ATTEMPTING TO CLOSE THE DOOR.

C Close the actuator and control circuit breakers.

C J. Perform Safety Stop/Proximity Sensor Check as follows:

C (1) Hook up interphone for voice communication between the
C cargo compartment and the flight deck.

C (2) Operate door electrically to closed, latched and locked
C position.

C (3) Verify appropriate CARGO light Flight Engineer's
C annunciator panel and DOOR OPEN light on pilot's
C caution and warning panel are off.

C (4) Manually slowly turn the lock actuator knob in unlock
C direction and stop when appropriate CARGO light and
C DOOR OPEN light on Flight Engineer's and Pilot's panels
C come on.

C (5) Measure position of safety stop relative to safety stop
C striker fitting (or floor beam lower surface at C-2
C door). Verify safety stop position is within limits
C shown in Figure 503 of 52-30-19. If safety stop
C measurement exceeds the maximum, move the proximity
C sensor slightly further away from the target and repeat
C steps (4) and (5) until the measurement is less than
C the maximum shown.

C NOTE: The measurement should be as close to maximum as
C possible to provide as much operating tolerance
C as possible for the safety stop.

C K. Upon completion of all component installations and
C adjustments, operate the door electrically open and closed.
C Assure proper operation of the door and of the warning
CR lights in the cockpit and indicator light on door.

CR L. Reinstall door liner and access panels.

C (1) Reinstall access panels on door lower hard liner and
C reinstall door upper liner.

CR (2) Reinstall circular access plate on door skin at lock
CR actuator. Verify fasteners secure plate tightly
CR against seal.

CR M. Gain access to exterior control switchbox and check
CR condition of cover hinge and spring and rollpin attaching
CR arm to hinge. Make corrections as required.

C 7. Operation and Hook Clearance Check

C A. The procedures for each door are identical except as noted.
C Perform the procedures in the sequence shown.

C WARNING: CARE MUST BE EXERCISED WHILE MAINTENANCE IS PERFORMED
C ON THE CARGO DOOR WITH ELECTRICAL POWER ON THE DOOR
C OPERATING CIRCUIT.

C B. Remove all compacted and any loose debris at sill area
C including forward and aft corners and above and below door
C pressure bottom seal and at door hook receptacles. Clean
C out drain holes at sill and clean door latching roller
C guides at each side of doorway.

C C. Remove door exterior access panel(s) and section of inner
C lining as necessary to allow voice communication between
C personnel working in the closed cargo compartment and
C personnel working outside the door.

C D. Check the pressure seal and seal retainer all around the
C door opening. Check for misalignment or out of straightness
C or other damage and make corrections as necessary.

C NOTE: Waviness of a seal can cause the door to hang up
C during closing and can cause pressurization leaks. A
C seal retainer displaced outboard may physically
C prevent a door from latching fully when closing.

C E. With one person inside the cargo compartment to perform
C checks and with one person outside to operate the door,
C cycle the door from full open to full closed, latched and
C locked.

C (1) Check for smooth operation. Check the door does not
C contact the retainer for the pressure seal. Check door
C clears the pressure stops and enters the roller guides
C smoothly.

C (2) Check upper and lower door hooks do not contact their
C receptacles on the frame during closing and opening and
C when door closed and latched.

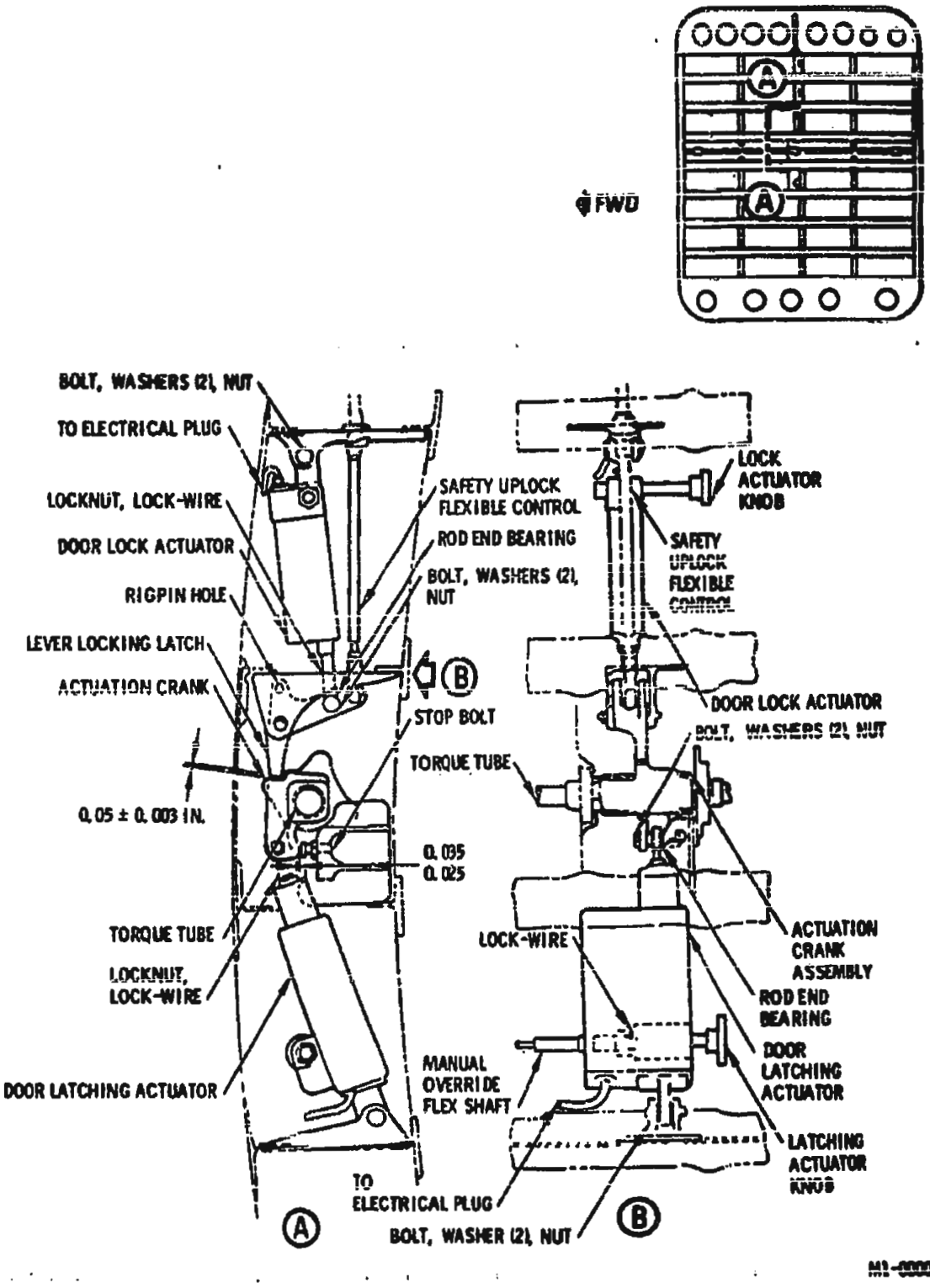
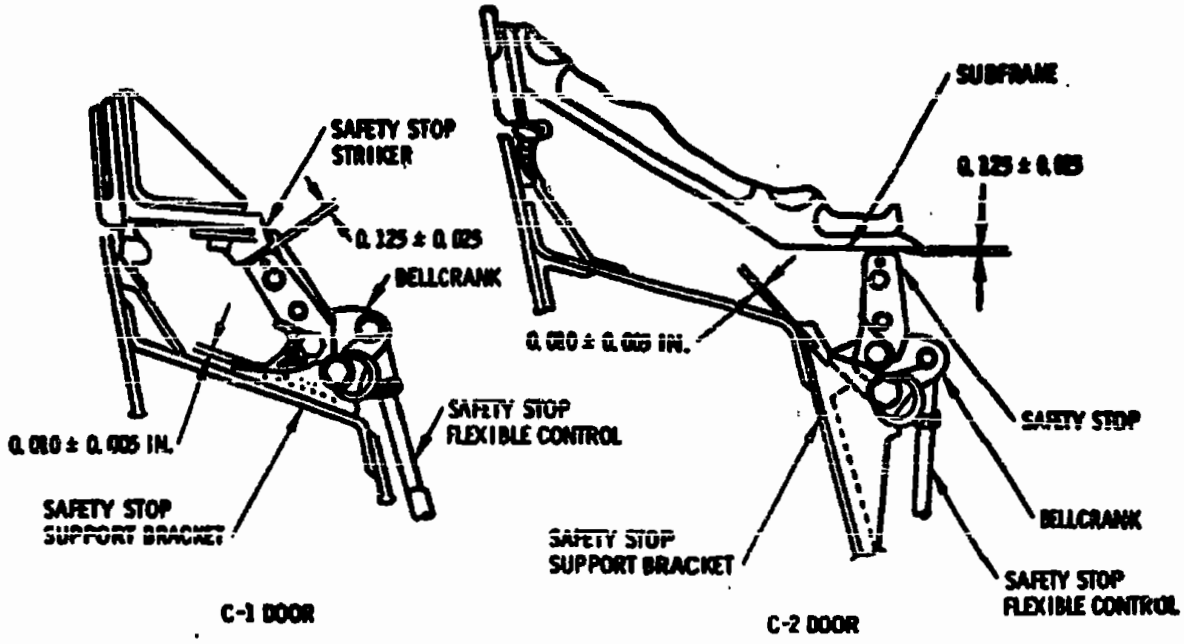
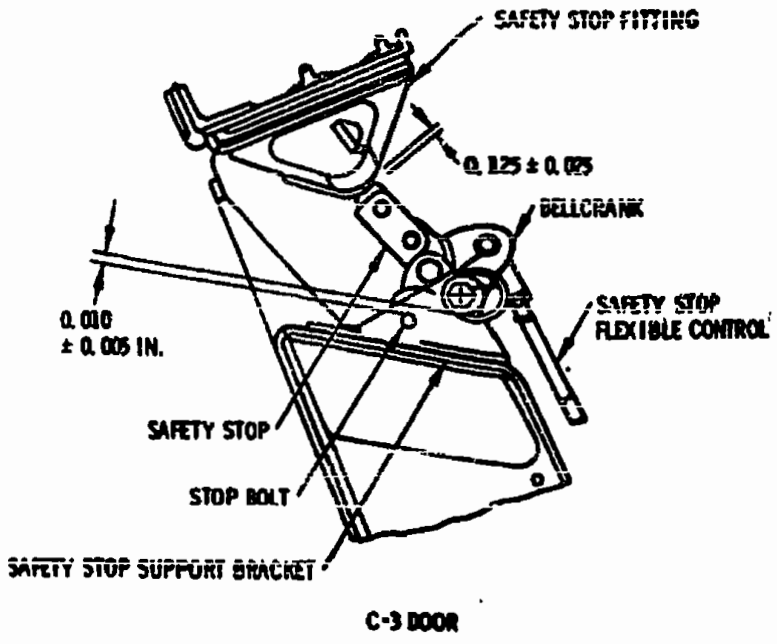

FWD
A
A
BOLT, WASHERS (2), NUT
TO ELECTRICAL PLUG
LOCKNUT, LOCK-WIRE
DOOR LOCK ACTUATOR
RIGPIN HOLE
LEVER LOCKING LATCH
ACTUATION CRANK
0.05 ± 0.003 IN.
TORQUE TUBE
LOCKNUT, LOCK-WIRE
DOOR LATCHING ACTUATOR
SAFETY UPLOCK FLEXIBLE CONTROL
ROD END BEARING
BOLT, WASHERS (2), NUT
B
STOP BOLT
0.035
0.025
MANUAL OVERRIDE FLEX SHAFT
TO ELECTRICAL PLUG
BOLT, WASHER (2), NUT
A
B
LOCK ACTUATOR KNOB
SAFETY UPLOCK FLEXIBLE CONTROL
DOOR LOCK ACTUATOR
BOLT, WASHERS (2), NUT
TORQUE TUBE
LOCK-WIRE
ACTUATION CRANK ASSEMBLY
ROD END BEARING
DOOR LATCHING ACTUATOR
LATCHING ACTUATOR KNOB

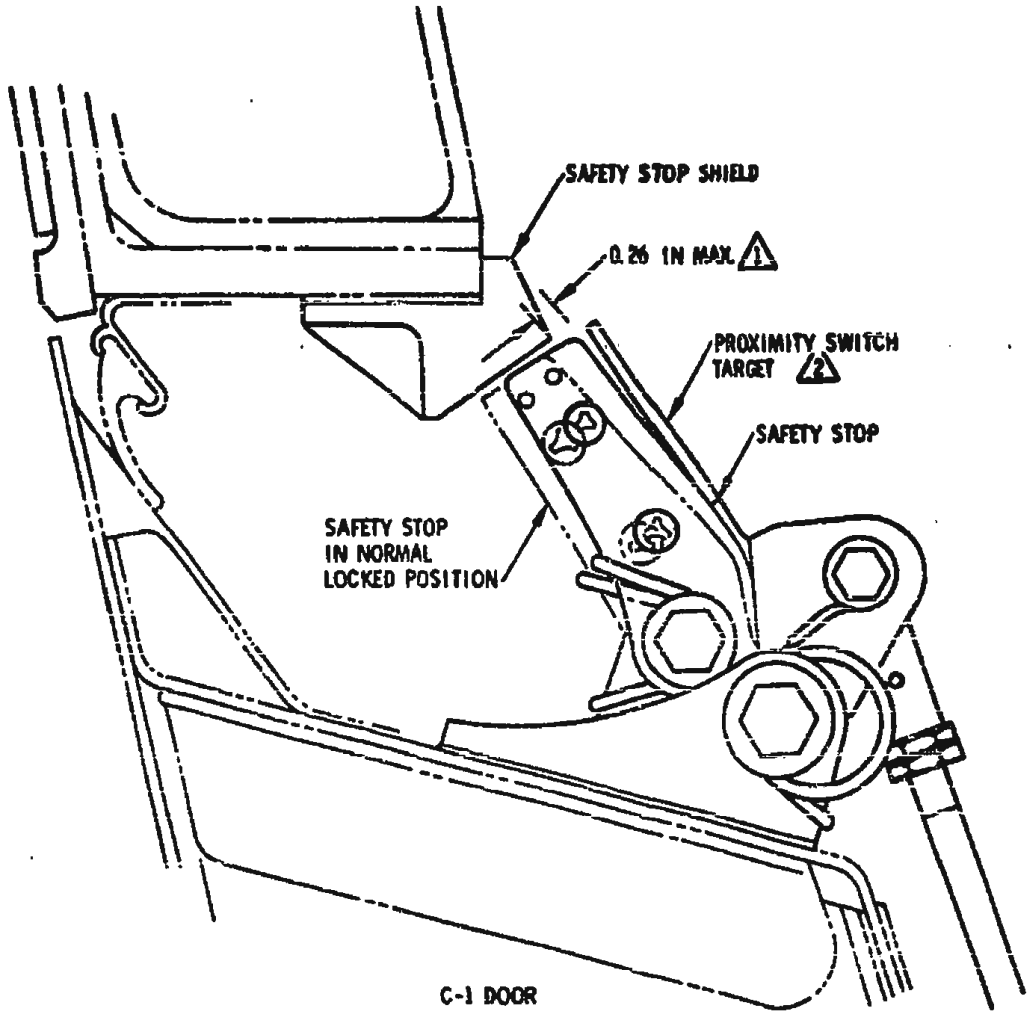
Figure 211





M1-0000-52-745

Figure 212

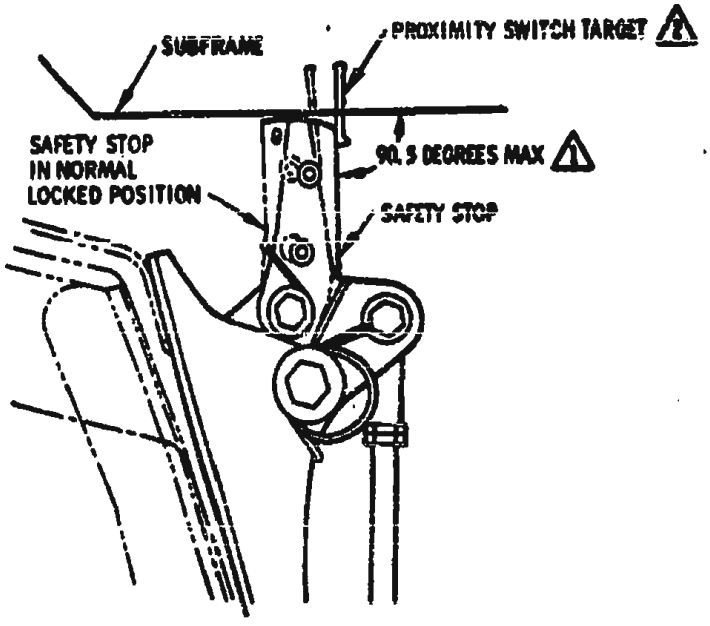


NOTE

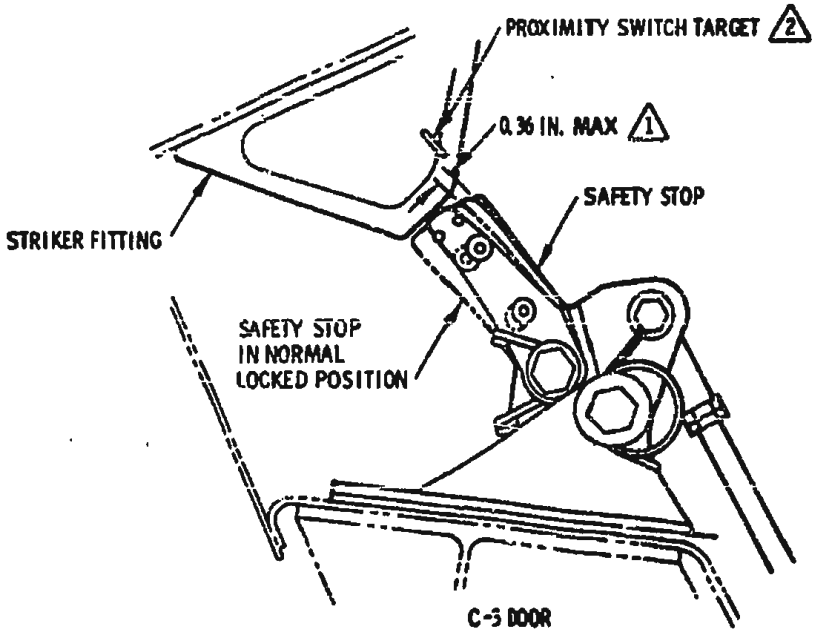
1. INBOARD TRAVEL LIMIT OF SAFETY STOP WHEN DOOR OPEN WARNING LIGHT TURNS ON DURING MANUAL UNLOCKING OF LOCK ACTUATOR
2. PROXIMITY SWITCH TARGET CUT AWAY FOR CLARITY

MI-0000-52-746

Figure 213 (Sheet 1)



C-2 DOOR



C-3 DOOR

NOTE:

1. INBOARD LIMIT OF SAFETY STOP WHEN DOOR OPEN WARNING LIGHT TURNS ON DURING MANUAL UNLOCKING OF LOCK ACTUATOR
2. PROXIMITY SWITCH TARGET CUT AWAY FOR CLARITY

M1-0000-52-747

Figure 213 (Sheet 2)

C C C

CARGO DOOR ACTUATION SYSTEM - ADJUSTMENT AND TEST

1. General

These procedures outline the steps to be performed to verify electrical or manual operation of the cargo doors from either outside, or inside the aircraft. The functional test procedure provides dimensions and tolerance required to meet the minimum standards of operation. The procedures are the same for each door except as noted. The door must operate smoothly with no binding or interference, during each of the tests specified herein.

NOTE: To facilitate removal of the cargo door exterior access plates, attaching panhead screws NAS 5203U and NAS 5204U can be replaced by hex-head bolts NAS 6403U and NAS 6404U in lengths equal to replaced screws.

C-2 cargo door fairing fasteners NAS 4603U and finishing washers LS 13013A can be replaced by NAS 6403U bolts with AN 960C washers. Bolt length must be equal to replaced fastener.

2. Equipment and Materials

Aluminum shim, 0.10-inch thick with safety streamer (3 required)

RAT Ground Safety Lock, PN 1304565, or equivalent

R Door Wedges

3. Referenced Procedures

	10-10-00	Parking - Maintenance Practices
	20-51-04	Environmental Sealing of L-1011 Aircraft
	23-43-00	Service Interphone System - Maintenance Practices
	24-41-00	External Power/Ground Service System - Maintenance Practices
	29-21-00	Ram Air Turbine - Maintenance Practices
	32-63-00	Air/ground Sensing System - Adjustment and Test
R	52-30-04	Cargo Door Closing Check - Adjustment and Test

52-30-07	Cargo Door Latching - Adjustment and Test
52-31-16	Cargo Door Closed Limit Switch - Adjustment and Test
52-30-13	Cargo Door Pressure Stop Bolt and Hooks - Adjustment and Test
52-30-19	Cargo Door Safety Stop - Adjustment and Test
52-30-22	Cargo Door Proximity Sensor - Adjustment and Test
52-31-01	Cargo Compartment Door - Removal and Installation
52-31-03	Linear Door Lock Actuator - Removal and Installation
52-34-00	Cargo Door Actuation System - Maintenance Practices
52-34-01	Lift Actuator - Removal and Installation

4. Adjustment/Test

A. Preparation for Door Electrical Operation

(1) Turn on electrical power (Ref. 24-41-00).

(2) For door operation from within, establish interphone communication between man inside cargo compartment and man outside cargo compartment (Ref. 23-43-00).

(3) On pilots overhead circuit breaker panel CB1, zone 210, verify that circuit breakers LANDING GEAR - PROX SW PWR - NO. 1 (L10) and LANDING GEAR - PROX SW PWR - NO. 4 (L11) are closed.

On Flight Engineer/Second Officers overhead circuit breaker panel CB2, zone 215, verify that circuit breaker MLG - GND - SENSE (L8) is closed.

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, verify that circuit breakers PROXIMITY SWITCH - 2 (H3), PROXIMITY SWITCH - 3 (H4), and DOOR - WARN - LTS (H2) are closed.

R (4) On galley left circuit breaker panel, zone 131, close and tag applicable cargo door circuit breakers ACTUATOR, CONTROL, CARGO COMPT-LTG, LIGHTING-CARGO, CARGO DOOR-AIR-GND SENSE-PWR.

(5) With electrical power on aircraft, circuit breakers closed, and all cargo doors closed and locked, all cargo door lights on the Flight Engineer/Second Officers annunciator panel should be off. The LOCK ACTUATOR INDICATING LIGHT on each cargo door should be on.

R R R R R CAUTION: THREE THRESHOLD GUIDE/RESTRAINT FITTINGS LOCATED ON THE C-2 CARGO DOOR THRESHOLD MUST BE IN THE RAISED POSITION PRIOR TO CLOSING THE C-2 DOOR, OR SIDEWAYS MOVEMENT OF AN UNRESTRAINED CARGO CONTAINER COULD IMPACT THE CARGO DOOR AND DAMAGE IT.

CAUTION: DOOR OPERATION IS LIMITED TO FOUR COMPLETE OPEN/CLOSE CYCLES WITHOUT PAUSE. AFTER THE FOURTH SUCH CYCLE, THE LIFT ACTUATOR SHOULD BE ALLOWED TO COOL FOR TWENTY MINUTES BEFORE RECYCLING THE DOOR.

B. Operational Test - Electrical Mode from Outside Aircraft

WARNING: ALL PERSONNEL AND EQUIPMENT MUST BE CLEAR OF CARGO DOORS BEFORE DOORS ARE OPERATED.

(1) Prepare for door operation (Ref. Para. A).

(2) Turn lock actuator opening control handle to UNLOCK position and hold until lock actuator stops (Ref. Figs. 501 and 502). LOCK ACTUATOR INDICATING LIGHT (green light on outside of door) must turn off when lock actuator starts to operate.

(3) Operate cargo door actuation switch to open; hold until door opens completely and lift actuator stops.

(4) Verify that applicable door warning light on Flight Engineer/Second Officers annunciator panel is on.

(5) Operate cargo door actuation switch to close; hold until door is closed, latched, and locked. LOCK ACTUATOR INDICATING LIGHT must come on.

(6) Verify that applicable door warning light on Flight Engineer/Second Officers annunciator panel is off.

(7) Turn off electrical power (Ref. 24-41-00).

C. Operational Test - Electrical Mode from Inside Aircraft

This procedure outlines the steps required to open the cargo door from within the cargo compartment. An attendant is required to stand by continuously during this procedure to open and close the door for normal admittance and exit of

the man performing the operation, and to open the door in case of an emergency.

The electrical switch located inside the cargo compartment, on the ceiling above the door sill, can only be used to open a cargo door.

WARNING: CLEAR PATH OF OPENING, OR CLOSING CARGO DOOR.

(1) Open cargo door using outside actuation switches. Station operator inside cargo compartment and close cargo door using outside actuation switches (Ref. Steps 4A and 4B).

(2) Open cargo door soft liner on center, aft side of door for access to lock actuator knob. Turn lock actuator knob approximately 9 1/2 turns clockwise, or until clutch slips, to unlock door.

(3) Move toggle switch, located on ceiling switch panel (above door sill), to DOOR OPEN position and hold. Verify that cargo door opens fully and lift actuator stops.

(4) Turn off electrical power (Ref. 24-41-00).

D. Operational Test - Manual Mode from Outside Aircraft

These procedures outline steps to be performed to verify opening and closing of cargo doors by manual means.

Cargo door operation instructions are stenciled adjacent each actuator to be operated. To open cargo doors follow Steps A-B-C.

(1) Open applicable actuator and control circuit breakers [Ref. Step 4A(4)].

CAUTION: VERIFY THAT CIRCUIT BREAKERS ARE OPEN BEFORE MANUALLY CRANKING DOOR.

C CAUTION: WHEN MANUALLY CRANKING THE CARGO DOORS OPEN OR
C CLOSED, PULL AND TAG THE CIRCUIT BREAKERS FOR THE
C CARGO DOOR ACTUATOR AND CARGO DOOR CONTROL. THE
C CIRCUIT BREAKERS ARE LOCATED IN THE LEFT-HAND
C GALLEY CIRCUIT BREAKER PANEL ZONE 130. FAILURE TO
C PULL THE CIRCUIT BREAKERS WILL RESULT IN SHEARING
C THE FLEXCABLE DRIVE FROM THE ACTUATOR IF THE DOOR
C CONTROL SWITCH IS STUCK IN THE CLOSED POSITION.
C THE DEACTIVATION PROCEDURES (REF. 52-34-00,201)
C MUST BE ACCOMPLISHED PRIOR TO DISPATCH OF FLIGHT.

(2) Verify that door unlocks manually as follows:

(a) On cargo door remove lock actuator control knob access panel.

NOTE: On C-2 door gain access to lock actuator control knob access panel by opening the lock actuator access door on the fairing.

(b) On C-2 door open view port access door.

(c) Reach into access hole on cargo door and manually rotate lock actuator control knob clockwise approximately 9 1/2 turns, or until clutch slips (OPEN STEP A).

(d) In view port check that lever locking latch (upper finger) is clear of actuation crank assembly.

(3) Verify that door unlatches manually as follows:

(a) Push open manual drive shutter (OPEN STEP B) on cargo door for access to latch actuator drive receptacle.

CAUTION: IF POWER TOOL IS USED, INPUT TO LATCH ACTUATOR MANUAL DRIVE RECEPTACLE MUST BE LIMITED TO 60 RPM MAXIMUM. DO NOT USE IMPACT TYPE TOOL TO DRIVE ACTUATOR.

(b) On all cargo doors, engage one-half inch drive extension into latch actuator drive receptable and turn clockwise until clutch slips (125 turns). Cargo door should raise approximately 1-1/2 inch above door sill.

WARNING: CLEAR PATH OF OUTWARD OPENING CARGO DOOR.

(4) Verify that cargo door actuates to open position manually as follows:

(a) Remove cover plate over manual drive receptacle.

CAUTION: IF POWER TOOL IS USED, INPUT TO RIGHT-ANGLE DRIVE GEARBOX MANUAL DRIVE RECEPTACLE MUST BE LIMITED TO 60 RPM MAXIMUM. DO NOT USE IMPACT TYPE TOOL TO DRIVE ACTUATOR.

(b) Engage one-half inch drive extension into lift actuator manual drive (right-angle drive gearbox) receptacle (OPEN STEP C), and rotate counterclockwise until cargo door is fully open,

CR

CR CR and torque limiting device starts to slip (200 turns).

CR (5) With door fully open, verify that stabilizer link rods are even with or above the lower surface of the lifting arms.

WARNING: CLEAR PATH OF CLOSING CARGO DOOR.

(6) Actuate cargo door to closed position manually as follows:

CAUTION: VERIFY THAT CIRCUIT BREAKERS ARE OPEN BEFORE MANUALLY CRANKING DOOR.

NOTE: Cargo door operation instructions are stenciled adjacent to each actuator to be operated. To close cargo doors, follow steps 2-3-4.

(a) Open applicable circuit breakers closed in Step 4A(4).

CAUTION: IF POWER TOOL IS USED, INPUT TO RIGHT-ANGLE DRIVE GEARBOX MANUAL DRIVE RECEPTACLE MUST BE LIMITED TO 60 RPM MAXIMUM. DO NOT USE IMPACT TYPE TOOL TO DRIVE ACTUATOR.

CR (b) Rotate manual right-angle drive gearbox receptacle clockwise until cargo door closes (CLOSE-STEP 2), and torque limiting device slips (200 turns).

(7) Latch door manually as follows:

CAUTION: IF POWER TOOL IS USED, INPUT TO LATCH ACTUATOR MANUAL DRIVE RECEPTACLE MUST BE LIMITED TO 60 RPM MAXIMUM. DO NOT USE IMPACT TYPE TOOL TO DRIVE ACTUATOR.

(a) On all cargo doors, engage one-half inch drive extension into latch actuator drive receptable and turn counterclockwise until clutch slips (125 turns).
CR CR Cargo door should lower approximately 1-1/2 inch to door sill.

(8) Verify that door locks manually as follows:

(a) On cargo door, reach into lock actuator control knob access hole and rotate lock actuator control knob counterclockwise approximately 9 1/2 full turns, or until clutch slips (CLOSE-STEP 4).

(b) In view port, observe that lever locking latch (upper finger) is in position over actuation crank, to prevent rotation of actuation crank assembly.

CAUTION: IF LEVER LOCKING LATCH IS NOT DOWN IN POSITION TO PREVENT ROTATION OF ACTUATION CRANK ASSEMBLY, DO NOT CONTINUE UNTIL CONDITION IS CORRECTED.

C CAUTION: ANYTIME A CARGO DOOR IS CLOSED AND LOCKED THE
C C-DOOR WARNING LIGHT ON THE F/E ANNUNCIATOR
C PANEL IS ON, THE SAFETY STOP AT THE TOP OF
C THE CARGO DOOR MUST BE VISUALLY CHECKED FOR
C BEING IN THE FULL LOCKED POSITION PRIOR TO
C DISPATCH OF FLIGHT (SEE CHAPTER/SECTION
C 52-34-00, Page 202).

(c) Install lock actuator knob access plate on door. On C-2 door fairing, close and latch lock actuator access door.

(d) On C-2 door fairing, close and latch view port access door.

(9) Install manual drive receptacle coverplate as follows:

(a) Verify coverplate and mounting surface are clean and in good condition.

(b) If sealant is damaged, clean and reseal (Ref. 20-51-04).

(c) Install coverplate.

(10) Perform cargo door deactivation procedures if a cargo door cannot be operated electrically to open and close, latch and lock.

(11) Close circuit breakers opened in Step 4D(1), if the cargo door can be closed, latched, and locked by the normal electrical mode of operation.

E. Operational Test - Manual Mode from Inside Aircraft

This procedure outlines the steps required to unlock and unlatch the cargo door manually, from within the cargo compartment. An attendant is required to stand by continuously during this procedure to open and close the door for normal admittance and exit of the man performing the operation, and to open the door in case of an emergency.

(1) Peel up lower center area of upper soft liner to gain access to lock and latch actuators.

NOTE: Liner is held in place with hook and pile tape.

(2) Verify that door unlocks manually as follows:

(a) Turn knob on lock actuator clockwise, approximately 9 1/2 turns, or until clutch slips.

(3) Verify that door unlatches as follows:

(a) Turn knob on latch actuator counterclockwise approximately 125 turns or until clutch slips. Door should raise approximately 1-1/2 inch at bottom, and door pressure steps should be clear of the door surround structure pressure stops.

F. Functional Test

This procedure outlines the steps to be performed to verify that the cargo door system meets the minimum acceptable standards for operation.

NOTE: It will be necessary to station a man inside the cargo compartment to perform this procedure.

(1) Prepare for cargo door operation (Ref. Para. A).

(2) With cargo door closed and locked, open cargo door using electrical power and verify the following:

(a) LOCK ACTUATOR INDICATING LIGHT turns off simultaneously with lock actuator operation.

(b) Applicable CARGO door locked caution light on Flight Engineer/Second Officers annunciator panel turns on.

(c) Lock actuator turns off.

(d) Latch actuator turns on and raises door to unlatched position.

(e) Latch actuator turns off and turns on lift (lifting) actuator.

(f) Lift actuator switches to full speed when door is one to two feet away from lower sill.

(g) Lift actuator reduces to half speed before turning off.

(h) Full door opening cycle time is 20 to 27 seconds.

(3) Close cargo door and verify the following:

(a) Lift actuator reduces to half speed one to two feet before door closes.

(b) Lift actuator turns off and latch actuator turns on.

(c) Latch actuator turns off and lock actuator turns on.

(d) Lock actuator turns off.

(e) Applicable CARGO door locked caution light on Flight Engineer/Second Officers annunciator panel turns off.

(f) LOCK ACTUATOR INDICATING LIGHT turns on.

NOTE: LOCK ACTUATOR INDICATING LIGHT must turn on after cargo door locked caution light on Flight Engineer/Second Officers annunciator panel turns off (Ref. 52-30-22, Adjustment and Test).

(g) Full door closing cycle time is 20 to 27 seconds.

(4) Open cargo door to full open position and verify the following:

(a) Lifting arms do not contact open position bumpers or upper door seal retainers.

(b) Stabilizer link rods are even with or above the lowest point of lifting arms.

(5) Close door until upper rollers start to enter upper roller guide fittings. Verify that rollers enter roller guide fittings freely.

NOTE: If C-3 door has the characteristic of cocking when door hangs vertically, the condition can be overcome temporarily by pushing aft and slightly up on lower forward corner of door. (To correct this condition, refer to 52-31-01, Removal and Installation, Para. D).

(6) Close door until door latching rollers start to enter the door lifting cam guide fittings. Verify that rollers are centered between lips of fittings.

NOTE: Light roller contact is acceptable.

(7) Close door until lower rollers start to enter lower roller guide fittings. Verify that rollers enter fittings freely.

(8) Operate door to close until lift actuator turns off; release door control switch before door latching action starts. Verify the following:

(a) One of lower rollers is in firm contact with inboard surface of lower roller guide fitting. Second roller must be within 0.060 inch of contact with guide fitting.

(b) Upper rollers are 0.000 to 0.040 inch from inboard cam surface of upper roller guides. Light contact between roller and upper surface of roller guide is acceptable (Ref. 52-30-04, Cargo Door Closing Check - Adjustment and Test).

(c) Door closed position limit switch is adjusted within tolerance. Press lower aft corner of door outboard and listen for microswitch to break contact (click). Switch contact should break when lower aft roller is 0.09 (±0.03) inch from the inboard roller guide surface of the lower aft roller guide fitting (Ref. 52-31-16, Cargo Door Closed Limit Switch, Adjustment and Test).

(9) Verify that cargo door actuation switchbox door is flush with fuselage contour. Door should be flush within +0.06 to -0.12 inch.

(10) Close cargo door to latched and locked position.

(11) Insert wedges to stabilize door for accurate stop bolt adjustment as follows:

NOTE: Wedges are used to simulate a door pressurized condition. After pressure stop bolt clearance adjustments are completed and wedges are removed, the stop bolt-to-pressure pad clearances will usually be greater than in the door-wedged condition.

(a) Insert wedges (Ref. 52-30-13 Fig. 504) between ditch stops on door and pressure fitting on surround structure at the four extreme corner locations; wedge as necessary to maintain firm contact (0.000 to 0.005 pads at four corner locations. For repeatability of rigging

clearance, wedges must be inserted in the following order:

- Upper forward corner
- Upper aft corner
- Lower forward corner
- Lower aft corner

R (12) With wedges installed, verify the following:

(a) Door pressure stop adjusting bolts located just above and below the torque tube, on the fore and aft sides of the door, are centered on the pressure stop wear pads within ±0.09 inch (Ref. 52-30-07, Cargo Door Latching - Adjustment and Test).

(b) Pressure stop adjusting bolt-to-wear pad clearance is 0.000 to 0.005 inch at the four corner pressure stops and 0.000 to 0.015 inch at all other pressure stops.

(c) Upper and lower rollers are in firm contact with outboard roller guide surface (rollers will not turn with finger pressure on rollers). A minimum of three rollers must be in contact.

(d) Gap between all upper hooks and eccentric pickup pins is 0.020 to 0.080 inch at forward and aft hooks, and 0.040 to 0.100 inch at center hook (Ref. 52-30-13, Cargo Door Pressure Stop Bolt and Hooks - Adjustment and Test).

(e) Inboard end of all upper hooks extend inboard 0.29 to 0.39 inch beyond most inboard point of eccentric pickup bars.

R (f) Gap between upper end of safety stop and safety stop striker, or floor beam (C-2 door), should be 0.100 to 0.150 inch (Ref. 52-30-19, Cargo Door Safety Stop, Adjustment and Test).

(g) Gap between proximity switch and safety stop target must be 0.06 (+0.040, -0.050) inch (Ref. 52-30-22, Cargo Door Proximity Sensor - Adjustment and Test).

(h) Door seal contacts seal striker interface around entire door, except at seal splice joints.

(i) Gap between door lower hooks and hook clevises is as follows: All forward and aft hooks, 0.010 to 0.072 inch; C-1 and C-2 door center hooks, 0.032 to 0.095 inch.

(j) Door is centered in fore and aft direction as specified in Table 501.

Ditch Stop Clearance*
Table 501

CARGO DOOR	LOCATION	DIMENSION
C-1	Beam No. 1 Pressure Stop	0.12 (±0.06) in.
	Beam No. 9 Pressure Stop	0.12 (±0.06) in.
C-2	Beam No. 1 Pressure Stop	0.12 (±0.06) in.
	Beam No. 9 Pressure Stop	0.12 (±0.06) in.
C-3	Beam No. 1 Pressure Stop	0.12 (±0.06) in.
	Beam No. 8 Pressure Stop	0.12 (±0.06) in.

*Between door ditch stop inner face and pressure stop fitting outer face at forward side of door only (Ref. 52-30-13, Cargo Door Pressure Stop Bolt and Hooks, Figure 508).

R (13) Remove wedges from between door pressure fitting and
R ditch stop.

R (14) Perform final adjustment of safety stop/proximity
R sensor (Ref. 52-30-19, Adjustment and Test).

R (15) Open cargo door, using electrical mode.

R (16) Turn off electrical power (Ref. 24-41-00).

G. Air/Ground Sensing System Integrity Check

This procedure outlines the steps required to ensure that cargo doors are electrically deactivated through the nose landing gear (NLG) and main landing gear (MLG) air/ground sensing system relays when the aircraft is airborne.

(1) Prepare for door operation (Ref. Para. A).

(2) On pilots overhead circuit breaker panel CB1, zone 210, open and tag circuit breakers ENVIR CONTROL SYSTEM

MANUAL CABIN PRESS FWD (H1) and AFT (H2), and RAT AUTO DEPLOY (L3).

(3) On pilots overhead FCES control panel, depress DLC/AUTO SPLR NO. 1 and NO. 2 switchlight to OFF, and placard.

(4) Verify that landing gear downlock safety pins are installed (Ref. 10-10-00).

(5) Verify that RAT ground safety lock is installed (Ref. 29-21-00).

(6) Operate each cargo door to open, then to closed position, to verify electrical operation of doors.

(7) On left and right MLG, place aluminum shim between air/ground safety sensor, and target.

(8) On each cargo door verify that LOCK ACTUATOR INDICATING LIGHT is on.

(9) Verify the following on each door being checked:

(a) Operate cargo door actuation switch to door open position. Door Actuators must not operate and LOCK ACTUATOR INDICATING LIGHT must remain on.

(b) Operate lock actuator control handle to UNLOCK position and hold. LOCK ACTUATOR INDICATING LIGHT must turn off simultaneously with turning on of lock actuator. Continue holding handle in UNLOCK position until lock actuator has unlocked and turned off. Latch actuator must not operate.

(10) Operate each cargo door actuation switch to door open position; verify the following conditions for each door being checked:

(a) Cargo door lock actuators must be unlocked.

(b) Cargo door lock ACTUATOR INDICATING LIGHT must be off.

(c) DOOR OPEN annunciator light on pilots center instrument panel must be on.

(d) All CARGO lights on Flight Engineer/Second Officers annunciator panel must be on.

(e) Cargo doors must not unlatch or rotate open.

WARNING: IF A CARGO DOOR UNLATCHES OR OPENS, THE FAULT MUST BE CORRECTED BEFORE CONTINUING.

(11) Operate each cargo door control switch to door closed position; verify the following conditions for each door being checked:

(a) Cargo door lock actuators must be actuated to door locked position.

(b) Cargo door lock actuator indicator lights must be on.

(c) DOOR OPEN annunciator light on pilots center instrument panel must be off.

(d) All CARGO lights on Flight Engineer/Second Officers annunciator panel must be off.

(12) Remove aluminum shims from MLG air/ground safety sensors installed in Step 4G(7).

(13) On NLG, place aluminum shim between air/ground safety sensor and target; verify the following:

(a) All cargo door lock actuator indicator lights must be off.

(b) CARGO lights on Flight Engineer/Second Officers annunciator panel must be off.

(14) Operate each cargo door lock actuator opening control handle to UNLOCK position and hold; verify the following:

WARNING: IF A CARGO DOOR UNLOCKS, UNLATCHES, OR OPENS, THE FAULT MUST BE CORRECTED BEFORE CONTINUING.

(a) Cargo doors must remain closed and latched with lock actuators locked.

(b) DOOR OPEN annunciator light on pilots center instrument panel must remain off.

(c) FWD CARGO, CTR CARGO, and AFT CARGO lights on Flight Engineer/Second Officers annunciator panel must remain off.

(15) Operate each cargo door actuation switch to door open position; verify the following:

WARNING: IF A CARGO DOOR UNLOCKS OR UNLATCHES, THE FAULT MUST BE CORRECTED BEFORE CONTINUING.

(a) Cargo doors must remain closed and latched, with lock actuators locked.

(b) DOOR OPEN annunciator light on pilots center instrument panel must remain off.

(c) CARGO lights on Flight Engineer/Second Officers annunciator panel must remain off.

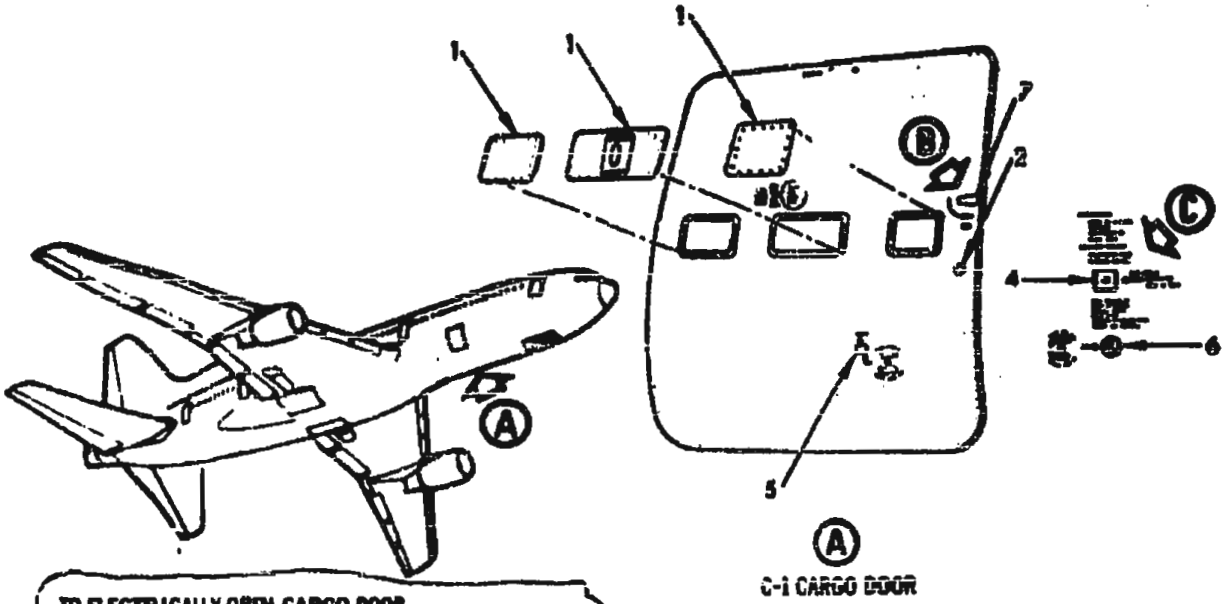
CAUTION: BE SURE ALL ARTIFICIAL TARGETS ARE REMOVED FROM AIR/GROUND SENSORS.

(16) Remove aluminum shims from NLG air/ground safety sensors.

(17) Remove placard installed in Step 4G(3).

(18) Remove tag and close circuit breakers opened in Step 4G(2).

(19) Turn off electrical power (Ref. 24-41-00).



A

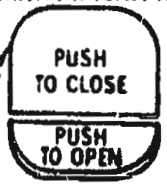
C-1 CARGO DOOR

TO ELECTRICALLY OPEN CARGO DOOR

WARNING: CLEAR PATH OF OUTWARD OPENING CARGO DOOR.
ROTATE UNLOCKING HANDLE ON DOOR AND HOLD FOR 15 SECONDS UNTIL ACTUATOR SHUTS OFF.
DEPRESS "PUSH TO OPEN" DOOR HALF UNTIL ACTUATOR SHUTS OFF.
CAUTION: IF DOOR DOES NOT RAISE REPEAT ABOVE PROCEDURE

TO ELECTRICALLY CLOSE CARGO DOOR

WARNING: CLEAR PATH OF CLOSING CARGO DOOR
DEPRESS "PUSH TO CLOSE" DOOR HALF UNTIL LOCK ACTUATOR INDICATING LIGHT COMES ON



CLOSE-STEP 1
PROP THIS
DOOR OPEN

4

CARGO DOOR MANUAL OPERATION

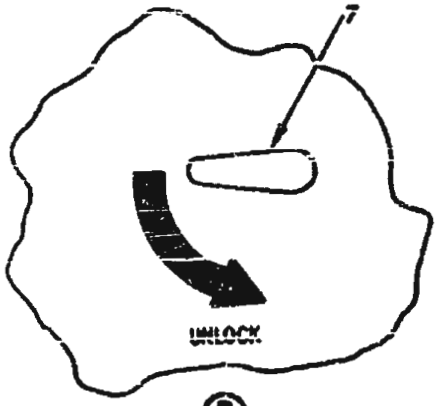
FIRST PULL ACTUATOR AND CONTROL CIRCUIT BREAKERS FOR FWD CARGO DOOR ON GALLEY LH CIRCUIT BREAKER PANEL

TO OPEN-FOLLOW STEPS A-B-C

TO CLOSE-FOLLOW STEPS 1-2-3-4

C

DOOR OPERATION INSTRUCTIONS WITH UNLOCKING HANDLE



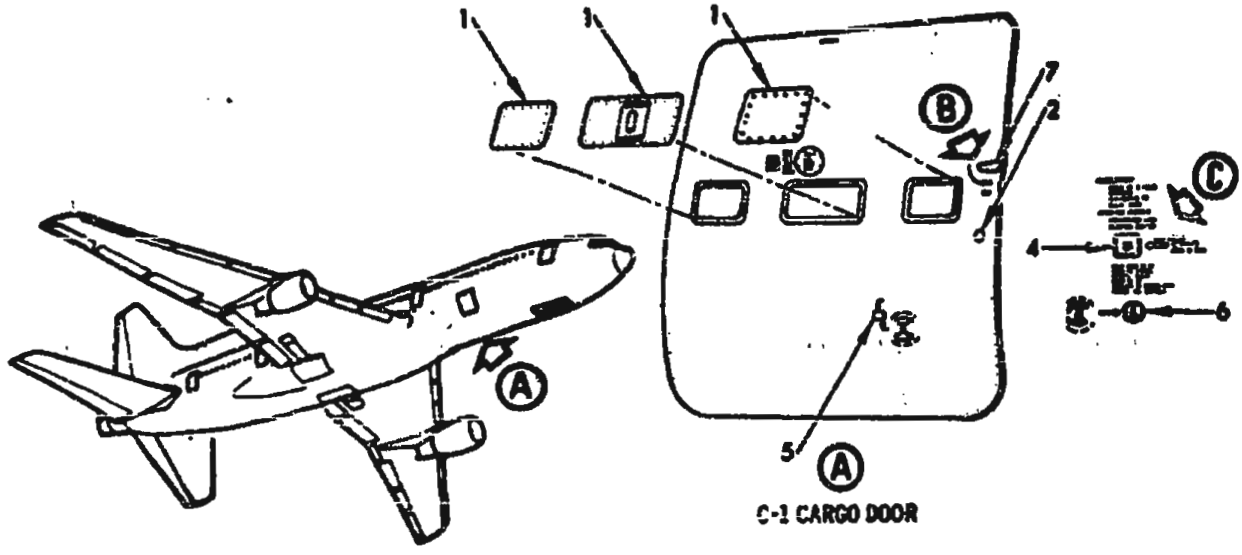
B

UNLOCKING INSTRUCTION

1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 NOT SHOWN
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX
7 DOOR UNLOCK HANDLE

M1-0000-52-646

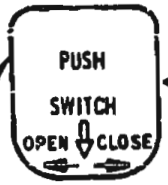
C-1 Cargo Door Actuation System - Adjustment and Test
Figure 501 (Sheet 1)



C-1 CARGO DOOR

TO ELECTRICALLY OPEN CARGO DOOR
WARNING: CLEAR PATH OF OUTWARD OPENING CARGO DOOR
ROTATE UNLOCKING HANDLE ON DOOR AND HOLD FOR 15 SECONDS UNTIL ACTUATOR SHUTS OFF
DEPRESS SWITCH BOX DOOR TO GAIN ACCESS TO SWITCH
PRESS SWITCH AFT AND HOLD UNTIL ACTUATORS SHUT OFF

TO ELECTRICALLY CLOSE CARGO DOOR
WARNING: CLEAR PATH OF CLOSING CARGO DOOR
DEPRESS SWITCH BOX DOOR TO GAIN ACCESS TO SWITCH
PRESS SWITCH FWD AND HOLD UNTIL LOCK ACTUATOR INDICATING LIGHT COMES ON



CLOSE-STEP 1
PROP THIS DOOR OPEN

4

CARGO DOOR MANUAL OPERATION

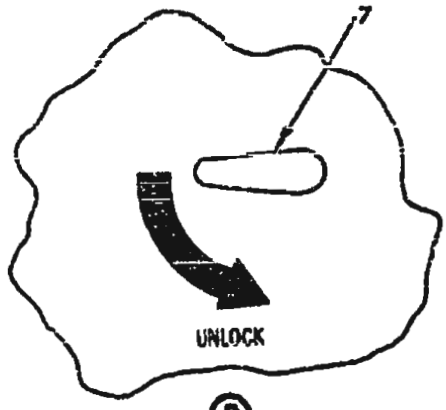
FIRST PULL ACTUATOR AND CONTROL CIRCUIT BREAKERS FOR FWD CARGO DOOR ON GALLEY LH CIRCUIT BREAKER PANEL

TO OPEN-FOLLOW STEPS A-B-C

TO CLOSE-FOLLOW STEPS 1-2-3-4

C

DOOR OPERATION INSTRUCTIONS WITH UNLOCKING HANDLE



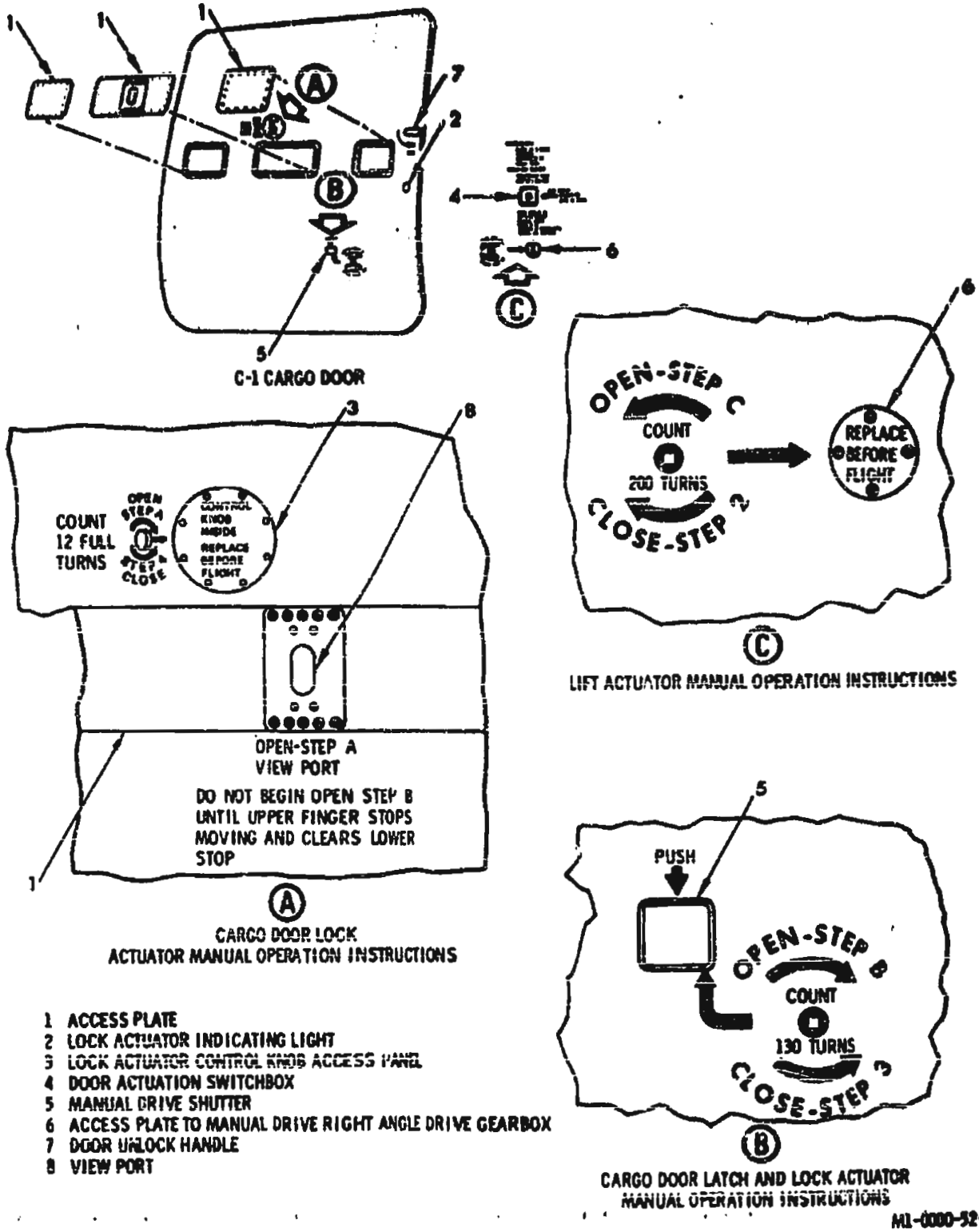
B

UNLOCKING INSTRUCTION

1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 NOT SHOWN
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX
7 DOOR UNLOCK HANDLE

MI-0000-52-447

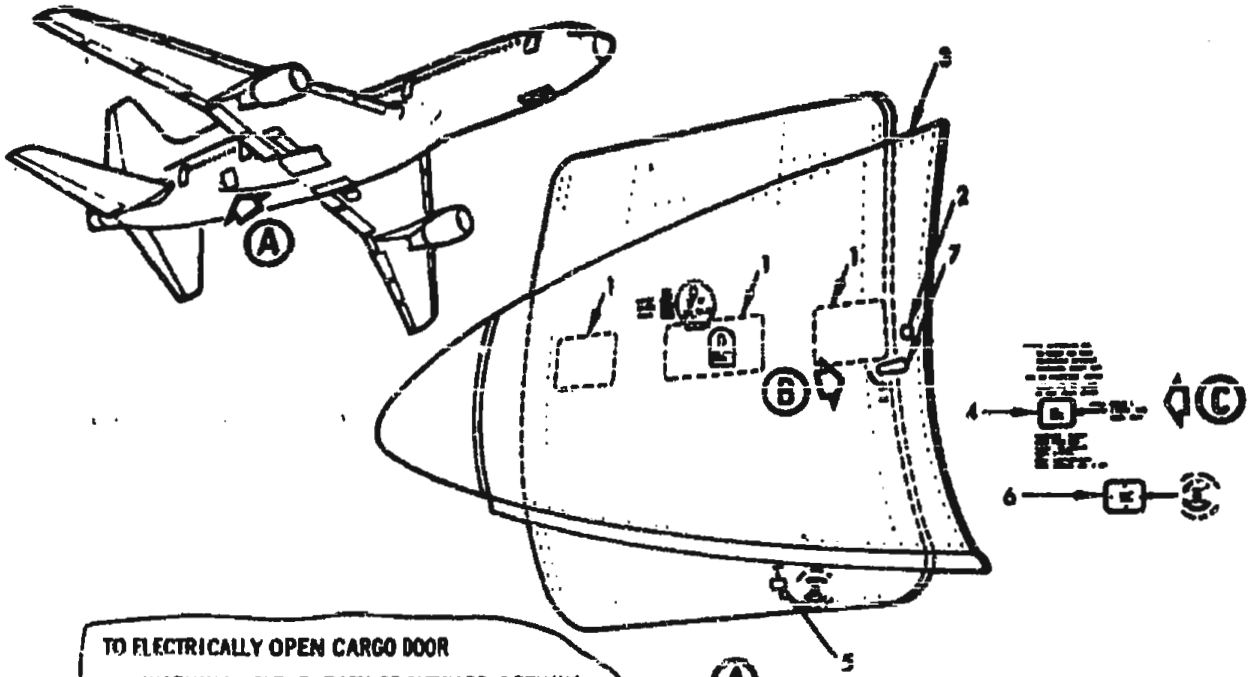
C-1 Cargo Door Actuation System - Adjustment and Test
Figure 501 (Sheet 1)



1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 LOCK ACTUATOR CONTROL KNOB ACCESS PANEL
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX
7 DOOR UNLOCK HANDLE
8 VIEW PORT

M1-0000-52-648

C-1 Cargo Door Actuation System - Adjustment and Test
Figure 501 (Sheet 2)



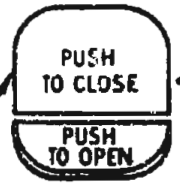
C-2 CARGO DOOR

TO ELECTRICALLY OPEN CARGO DOOR

WARNING: CLEAR PATH OF OUTWARD OPENING CARGO DOOR.
ROTATE UNLOCKING HANDLE ON DOOR AND HOLD FOR 15 SECONDS UNTIL ACTUATOR SHUTS OFF.
DEPRESS "PUSH TO OPEN" DOOR HALF UNTIL ACTUATOR SHUTS OFF.
CAUTION: IF DOOR DOES NOT RAISE REPEAT ABOVE PROCEDURE

TO ELECTRICALLY CLOSE CARGO DOOR

WARNING: CLEAR PATH OF CLOSING CARGO DOOR
DEPRESS "PUSH TO CLOSE" DOOR HALF UNTIL LOCK ACTUATOR INDICATING LIGHT COMES ON.



CLOSE-STEP 1
PROP THIS
DOOR OPEN

CARGO DOOR MANUAL OPERATION

FIRST PULL ACTUATOR AND CONTROL CIRCUIT BREAKERS FOR CTR CARGO DOOR ON GALLEY 1H CIRCUIT BREAKER PANEL

TO OPEN-FOLLOW STEPS A-B-C

TO CLOSE-FOLLOW STEPS 1-2-3-4

C

DOOR OPERATION INSTRUCTIONS

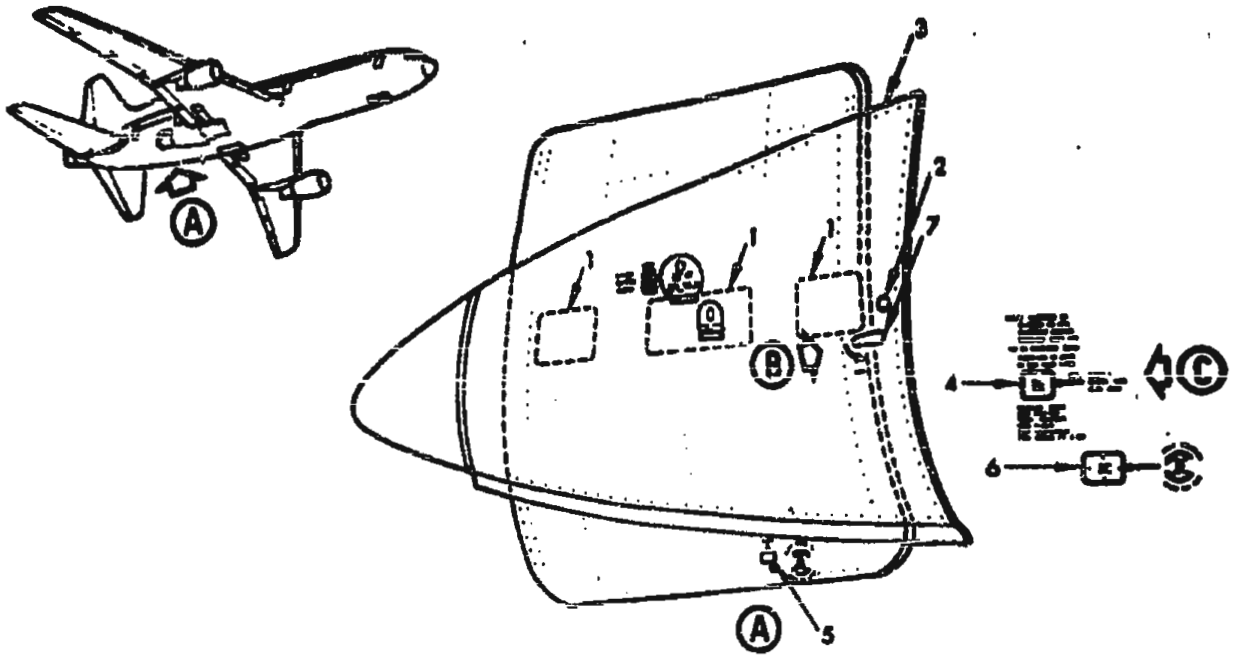
B

UNLOCKING INSTRUCTION

1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 NOT SHOWN
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX
7 DOOR UNLOCK HANDLE

M1-0000-52-650

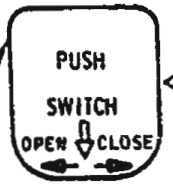
C-2 Cargo Door Actuation System - Adjustment and Test
Figure 502 (Sheet 1)



C-2 CARGO DOOR

TO ELECTRICALLY OPEN CARGO DOOR
WARNING: CLEAR PATH OF OUTWARD OPENING CARGO DOOR
ROTATE UNLOCKING HANDLE ON DOOR AND HOLD FOR 15 SECONDS UNTIL ACTUATOR SHUTS OFF
DEPRESS SWITCH BOX DOOR TO GAIN ACCESS TO SWITCH
PRESS SWITCH AFT AND HOLD UNTIL ACTUATORS SHUT OFF

TO ELECTRICALLY CLOSE CARGO DOOR
WARNING: CLEAR PATH OF CLOSING CARGO DOOR
DEPRESS SWITCH BOX DOOR TO GAIN ACCESS TO SWITCH
PRESS SWITCH FWD AND HOLD UNTIL LOCK ACTUATOR INDICATING LIGHT COMES ON



CLOSE-STEP 1
PROP THIS DOOR OPEN

CARGO DOOR MANUAL OPERATION

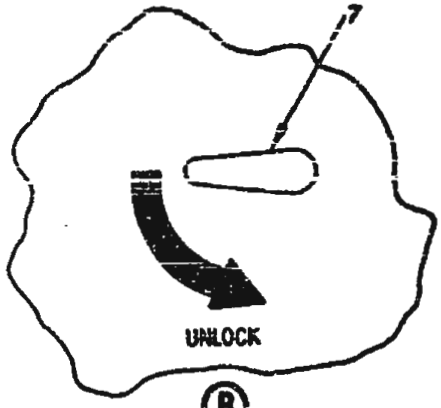
FIRST PULL ACTUATOR AND CONTROL CIRCUIT BREAKERS FOR CTR CARGO DOOR ON GALLEY LH CIRCUIT BREAKER PANEL

TO OPEN-FOLLOW STEPS A-B-C

TO CLOSE-FOLLOW STEPS 1-2-3-4

C

DOOR OPERATION INSTRUCTIONS WITH UNLOCKING HANDLE



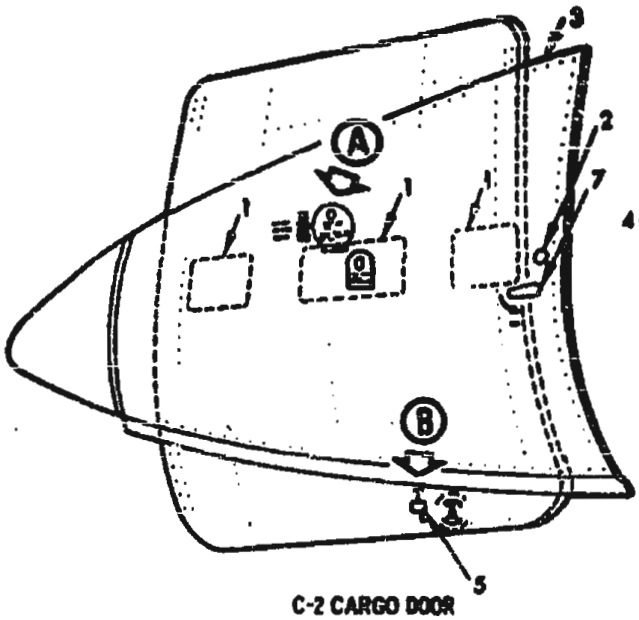
B

UNLOCKING INSTRUCTION

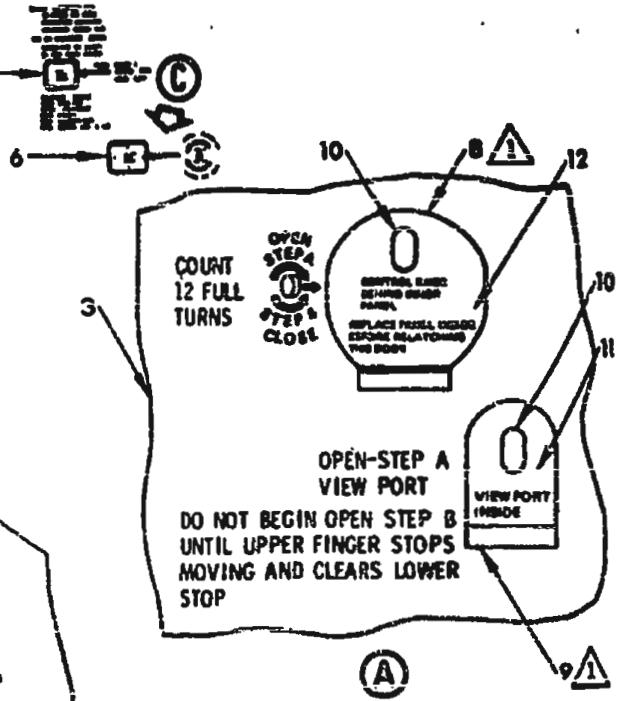
1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 NOT SHOWN
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX
7 DOOR UNLOCK HANDLE

A11-0000-52-651

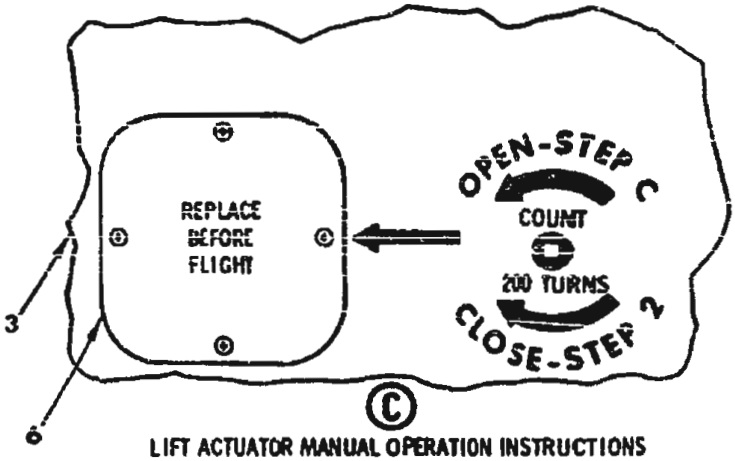
C-2 Cargo Door Actuation System - Adjustment and Test
Figure 502 (Sheet 1)



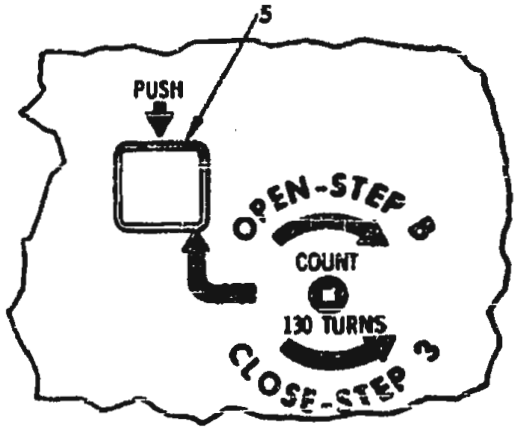
C-2 CARGO DOOR



CARGO DOOR LOCK
ACTUATOR MANUAL OPERATION INSTRUCTIONS



LIFT ACTUATOR MANUAL OPERATION INSTRUCTIONS



CARGO DOOR LATCH AND LOCK ACTUATOR
MANUAL OPERATION INSTRUCTIONS

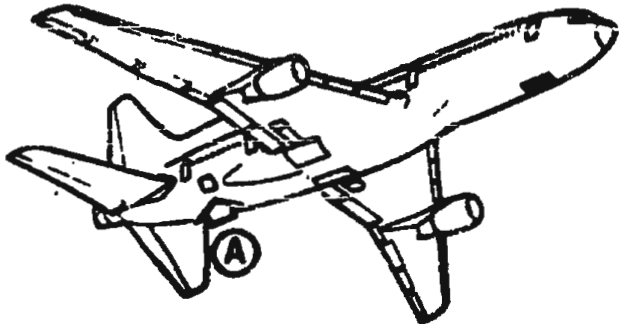
1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 FAIRING
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX
7 DOOR UNLOCK HANDLE
8 LOCK ACTUATOR ACCESS DOOR
9 VIEW PORT ACCESS DOOR
10 DOOR LATCH
11 VIEW PORT
12 LOCK ACTUATOR CONTROL KNOB

NOTE

1 ON THE C-2 DOOR, ACCESS TO ITEMS 11 AND 12 IS THRU DOORS 8 AND 9

A41-0000-52-491

C-2 Cargo Door Actuation System - Adjustment and Test
Figure 502 (Sheet 2)



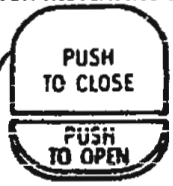
C-3 CARGO DOOR

TO ELECTRICALLY OPEN CARGO DOOR

WARNING: CLEAR PATH OF OUTWARD OPENING CARGO DOOR.
ROTATE UNLOCKING HANDLE ON DOOR AND HOLD FOR 15 SECONDS UNTIL ACTUATOR SHUTS OFF.
DEPRESS "PUSH TO OPEN" DOOR HALF UNTIL ACTUATOR SHUTS OFF.
CAUTION: IF DOOR DOES NOT RAISE REPEAT ABOVE PROCEDURE

TO ELECTRICALLY CLOSE CARGO DOOR

WARNING: CLEAR PATH OF CLOSING CARGO DOOR
DEPRESS "PUSH TO CLOSE" DOOR HALF UNTIL LOCK ACTUATOR INDICATING LIGHT COMES ON.



CLOSE-STEP 1
PROP THIS DOOR OPEN

CARGO DOOR MANUAL OPERATION

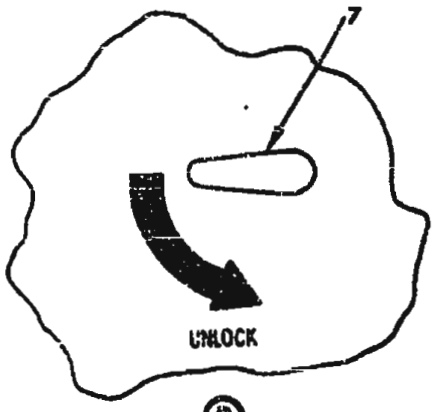
FIRST PULL ACTUATOR AND CONTROL CIRCUIT BREAKERS FOR AFT CARGO DOOR ON GALLEY LH CIRCUIT BREAKER PANEL

TO OPEN-FOLLOW STEPS A-B-C

TO CLOSE-FOLLOW STEPS 1-2-3-4

C

DOOR OPERATION INSTRUCTIONS WITH UNLOCKING HANDLE



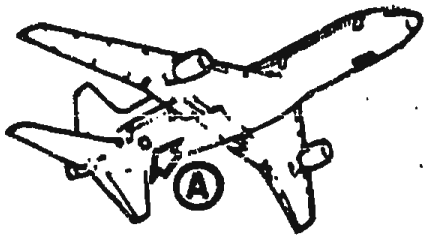
B

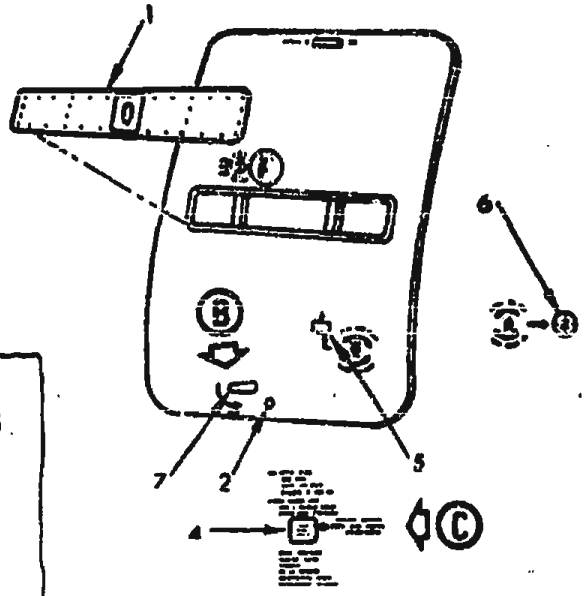
UNLOCKING INSTRUCTION

1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 NOT SHOWN
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX
7 DOOR UNLOCK HANDLE

M1-0000-52-656

C-3 Cargo Door Actuation System - Adjustment and Test
Figure 503 (Sheet 1)

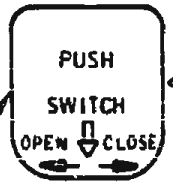




A
C-3 CARGO DOOR

TO ELECTRICALLY OPEN CARGO DOOR
WARNING: CLEAR PATH OF OUTWARD OPENING CARGO DOOR
ROTATE UNLOCKING HANDLE ON DOOR AND HOLD FOR 15 SECONDS UNTIL ACTUATOR SHUTS OFF
DEPRESS SWITCH BOX DOOR TO GAIN ACCESS TO SWITCH
PRESS SWITCH AFT AND HOLD UNTIL ACTUATORS SHUT OFF

TO ELECTRICALLY CLOSE CARGO DOOR
WARNING: CLEAR PATH OF CLOSING CARGO DOOR
DEPRESS SWITCH BOX DOOR TO GAIN ACCESS TO SWITCH
PRESS SWITCH FWD AND HOLD UNTIL LOCK ACTUATOR INDICATING LIGHT COMES ON



CLOSE-STEP 1
PROP THIS DOOR OPEN

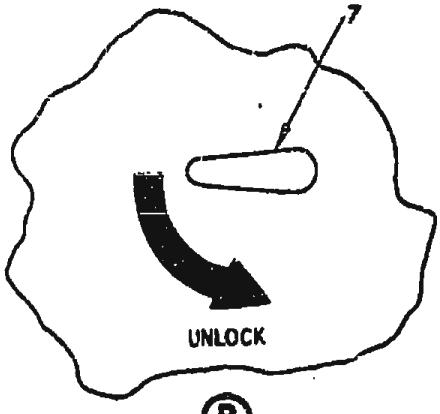
CARGO DOOR MANUAL OPERATION

FIRST PULL ACTUATOR AND CONTROL CIRCUIT BREAKERS FOR AFT CARGO DOOR ON GALLEY LH CIRCUIT BREAKER PANEL

TO OPEN-FOLLOW STEPS A-B-C

TO CLOSE-FOLLOW STEPS 1-2-3-4

C
DOOR OPERATION INSTRUCTIONS WITH UNLOCKING HANDLE

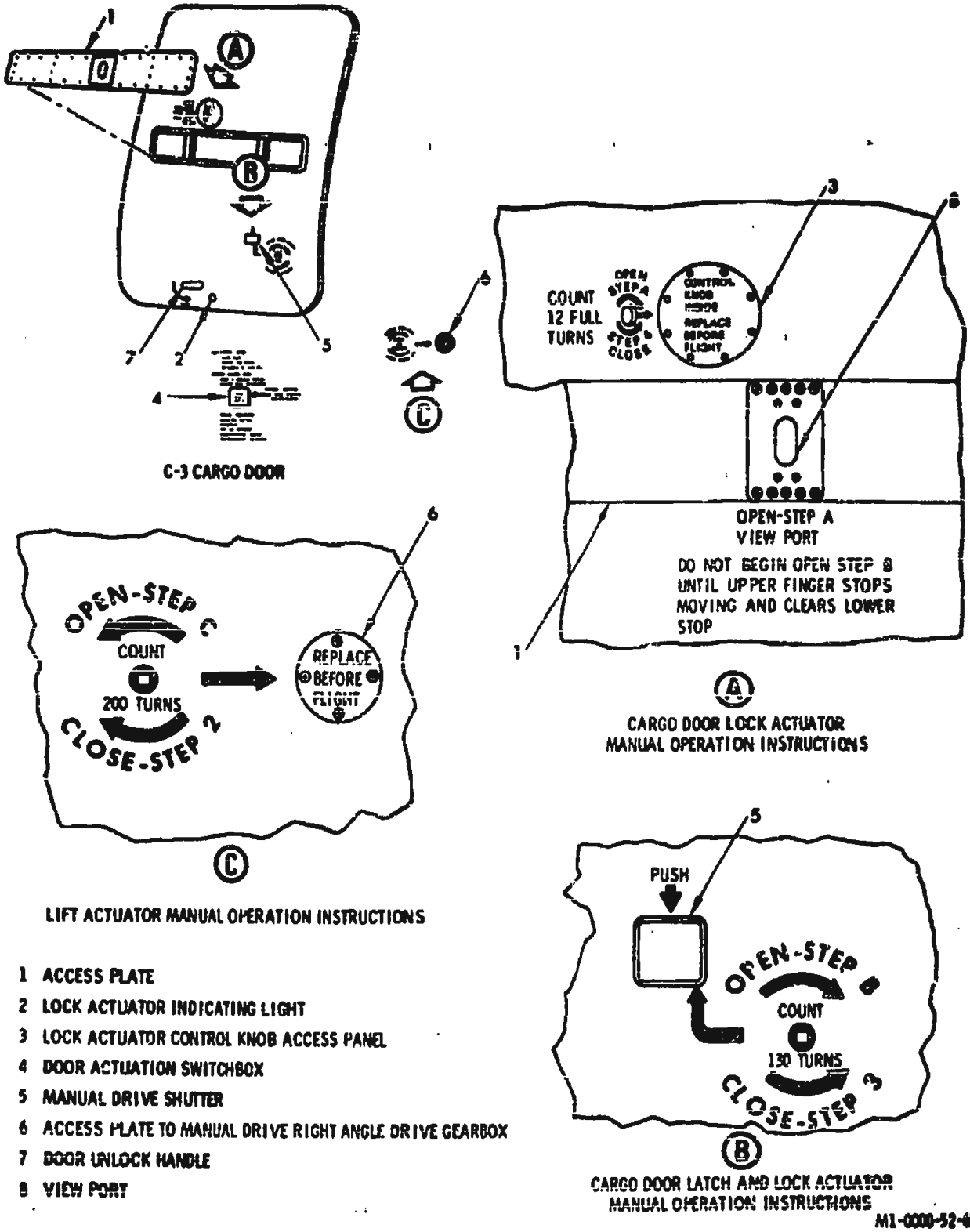


B
UNLOCKING INSTRUCTION

1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 NOT SHOWN
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX

ML-0000-52-657

C-3 Cargo Door Actuation System - Adjustment and Test
Figure 503 (Sheet 1)



1 ACCESS PLATE
2 LOCK ACTUATOR INDICATING LIGHT
3 LOCK ACTUATOR CONTROL KNOB ACCESS PANEL
4 DOOR ACTUATION SWITCHBOX
5 MANUAL DRIVE SHUTTER
6 ACCESS PLATE TO MANUAL DRIVE RIGHT ANGLE DRIVE GEARBOX
7 DOOR UNLOCK HANDLE
8 VIEW PORT

M1-0000-52-458

C-3 Cargo Door Actuation System - Adjustment and Test
Figure 503 (Sheet 2)

CARGO DOOR LIFT ACTUATOR - REMOVAL AND INSTALLATION

1. General

One rotary type lift actuator is installed above each cargo door.

This procedure includes removal and installation information for the lift actuator, and the two torque shafts at each cargo door.

2. Equipment and Materials

Lock-wire, Fed Spec. QQ-W-390, 0.032-inch diameter, or equivalent

Rigpin, steel rods, 0.093 (+0.005, -0.000) inch diameter

3. Referenced Procedures

52-34-00 Cargo Door Actuation System - Adjustment and Test

R 52-34-03 Torque Shaft - Removal and Installation

4. Removal/Installation

A. Removal

WARNING: WITH BOTH TORQUE SHAFTS DISCONNECTED FROM THE GEARBOXES, THE CARGO DOOR IS FREE TO SWING WITHOUT RESTRAINT. DOOR MUST BE PROPERLY SUPPORTED, IF OPEN, DURING THIS PROCEDURE.

NOTE: When removing a lift actuator (Ref. Fig. 401), the torque shafts should also be removed. With the actuator disconnected, and moved downward from its mounted position, one or both of the torque shafts can be removed.

This procedure can be accomplished with a door in any position if the door is properly supported, and with a suitable access to the lift actuator and torque shafts.

The recommended position is with the door slightly open, hanging down from the gearboxes. If the door is opened beyond the down (vertical) position, the door must be properly supported.

C NOTE: The recommended support for the door is a Nordco
C scissor lift, model 5008. Use of this lift will, if
C necessary, allow lowering or raising of the door with
C both torque shafts (drive shafts) disconnected.

C The door should rest on bags of oil-dry or other
C suitable material on the lift platform to protect the
C door from damage.

Because of limited access to the C-1 and C-2 cargo compartments with the door closed, it is recommended that replacement of the lift actuator not be accomplished in the closed position, unless standby personnel are available to provide aid in case of emergency.

WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON DOOR.

B. Removal

(1) Open cargo door electrically or manually until in vertical position, hanging down from door gearboxes (Ref. 52-34-00).

(2) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(3) Tag electrical and manual door controls.

(4) Gain access to lift actuator and torque shafts above door opening.

(5) Remove screws from each torque shaft coupling, remove coupling.

CAUTION: PROTECT POLISHED SURFACES OF TORQUE SHAFTS DURING MAINTENANCE PROCEDURES.

(6) Grasp each torque shaft with hand (or if mechanical aid is required, protect shaft surfaces from damage) and slide torque shaft toward the lift actuator.

NOTE: If shafts cannot be moved, apply manual pressure inboard or outboard on the bottom of the door, as required, to take load off of the torque shaft splines.

(7) Disconnect manual drive flex shaft from lift actuator.

(8) Disconnect electrical connector from lift actuator.

R (9) Remove actuator mount bolts.

R (10) Carefully remove actuator away from support structure.
R Retain torque shafts to prevent falling out of
R actuator.

C. Installation

(1) Verify that:

(a) Circuit breakers opened in Step 4B(2) are open and tagged.

(b) Electrical and manual door controls are tagged.

(c) Correct actuator is selected for installation at each location.

(d) Actuator mounting surfaces, torque shaft splines, and gearbox splined ends are clean and free of obstruction.

(2) Verify that actuator is in the door-closed position (Ref. Para. 4D).

(3) Insert nineteen spline end of torque shafts into lift actuator.

NOTE: Shafts may be held in place with tape to facilitate installation.

(4) Move actuator lock release arm in direction away from torque shaft drive splines to fully disengaged
R position, and lockwire in this position.

R CAUTION: ACTUATOR LOCK RELEASE ARM MUST REMAIN LOCKWIRED IN
R DISENGAGED POSITION TO PREVENT DAMAGE TO ACTUATOR
R WHICH WOULD RESULT FROM OPERATING ACTUATOR WITH
R INTERNAL LOCK PAWL STILL ENGAGED.

CAUTION: INSTALL CORRECT ACTUATOR DASH NUMBER AT EACH CARGO DOOR LOCATION OR DAMAGE WILL RESULT.

(5) Install lift actuator (electrical receptacle facing inboard) using bolts and washers. Torque bolts.

NOTE: To facilitate installation of the forward inboard actuator mount bolt, the platenut may be removed, if installed at that location, and a mount bolt installed, bolt head up, with washers and nut.

(6) Connect manual drive flex shaft to actuator. Lock-wire nut.

(7) Connect electrical plug to actuator receptacle.

WARNING: WHEN DOOR IS OPEN, WITH DOOR OPENING TORQUE SHAFTS DISCONNECTED, THE DOOR WILL FREE FALL TOWARD THE CLOSED POSITION IF UNRESTRAINED.

(8) Lower door with hoist, or equivalent restraint to door down position, if required.

(9) Manually push cargo door into door opening and manually latch door mechanism (130 turns counterclockwise on door latching receptacle).

(10) Manually lock cargo door.

(11) Install torque shafts in door gearboxes (Ref. Para. 4E).

R (12) Close circuit breakers opened in Step 4B(2).

R (13) Remove tags from door electrical and manual controls.

R (14) Adjust door to full open position as follows (Ref. 52-34-00):

(a) Electrically operate door to full open position.

CAUTION: DOOR LIFTING ARMS MUST NOT STRIKE DOOR OPEN BUMPERS OR UPPER SEAL RETAINERS.

NOTE: When door is in correct full open position the stabilizer link rods should be flush with, or above, the lower flat horizontal surface of lifting arms.

(b) Remove hex plug and O-ring from lower side of lift actuator to expose the switch adjustment screw located on actuator cam shaft assembly.

NOTE: Adjustment screw is located approximately one inch inside the actuator case and can be seen with the aid of a flashlight.

(c) Adjust door opening by rotating switch adjustment screw with screwdriver. Operate door to check effect of each adjustment.

NOTE: Clockwise screw rotation decreases output stroke (door opens less). Counterclockwise

rotation increases the output stroke (door opens more).

One complete turn of adjustment screw changes door opening angle 4.25 degrees.

(d) Install O-ring and plug. Lock-wire plug to switch gear case cover screw.

R (15) Verify door operation (Ref. 52-34-00).

D. Lift Actuator Door Closed Reference Adjustment

(1) Verify that lift actuator is in door-closed position as follows:

NOTE: This procedure is performed with torque shafts disengaged from gearboxes.

(a) Remove access plate from aft side of actuator to expose alignment slot and actuator limit switch actuating cam hole.

(b) Check that cam hole is centered in the alignment slot (Ref. Fig. 401, View F). If not, manually drive actuator in opening or closing direction until cam hole is centered.

NOTE: When cam hole is properly centered, a 0.093 (+0.005, -0.000) inch diameter pin can be inserted into the hole; the pin should appear horizontal. When the cam hole is off center slightly the pin will bear against the edge of the alignment slot and tilt the pin.

(c) With the cam hole centered, check that the actuator drive alignment mark aligns with the mark on the lock-wire tang within three degrees. (Lock-wire tang is located at the three o'clock position, looking forward at aft end of lift actuator.)The actuator may be driven an additional small amount to obtain alignment provided the cam hole remains centered. If actuator cannot be set as described, replace actuator.

(d) Remove rig pin.

(e) Install access plate on alignment slot.

(f) Actuator is now indexed and ready for torque shaft installation (Ref. Para. 4E).

NOTE: Actuator door closed reference position must be rechecked after every removal of actuator torque shafts.

E. Lift Actuator Torque Shaft Installation

(1) Verify cargo door to be in closed, latched, and locked position.

(2) Verify lift actuator to be in door closed position (Ref. Para. 4D).

(3) Rotate actuator torque shafts as required to align splined interfaces of shafts with the door gearboxes.

NOTE: Each shaft has 19 splines on one end and 18 splines on the other to provide a vernier capability. When properly aligned, torque shafts should slide in easily. If required, door lifting arm may be deflected to rotate gearbox splines sufficiently to mate splines. This should be done only after trying all spline combinations and mating the combination that requires the least amount of rotation of the gearbox female spline.

(4) With torque shaft spline engaged in gearbox, push torque shaft into gearbox until it bottoms.

(5) Install torque shaft couplings in groove. Do not tighten coupling screws.

(6) With thickness gage, measure and record clearance between actuator drive and coupling with coupling seated against outer (away from actuator) edge of torque shaft groove.

(7) Remove couplings and disengage torque shaft from gearboxes.

(8) Using gap information obtained in Step (6), determine thickness of laminated shim required to provide torque shaft axial clearance of 0.010 to 0.030 inch with couplings installed.

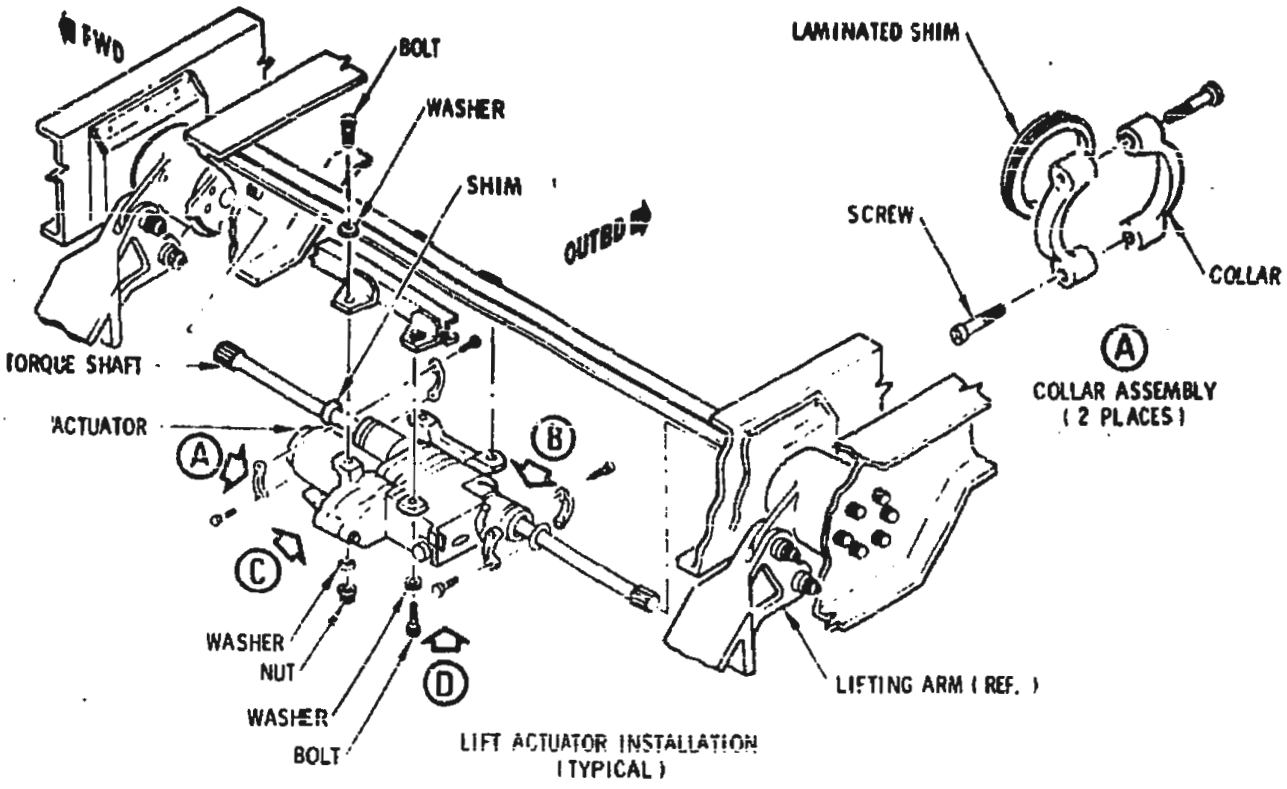
(9) Install laminated shims on forward and aft torque shafts, as required.

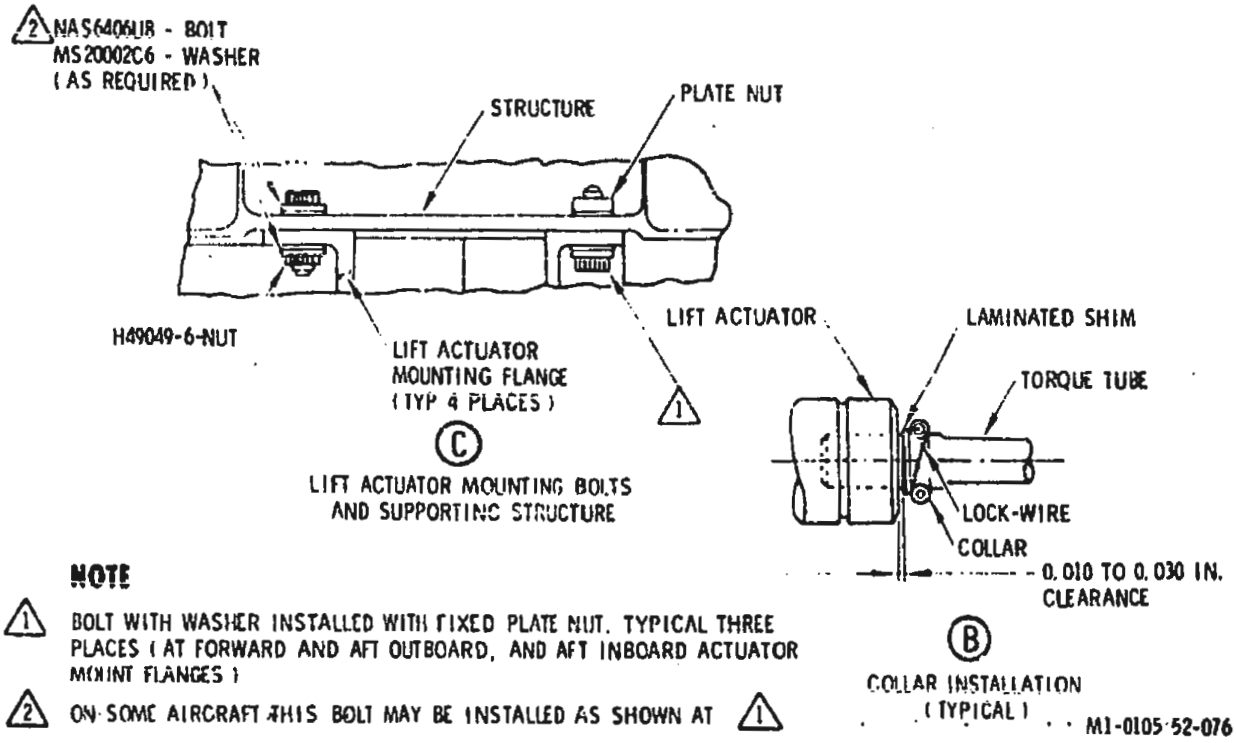
(10) Reinstall torque shafts as described in Steps (3) and (4).

(11) Slide laminated shims against actuator drives. Install couplings with laminated shims between actuator and coupling.

(12) Torque and lock-wire coupling screws.

(13) Verify end clearance of 0.010 to 0.030 inch between laminated shims and actuator drives.

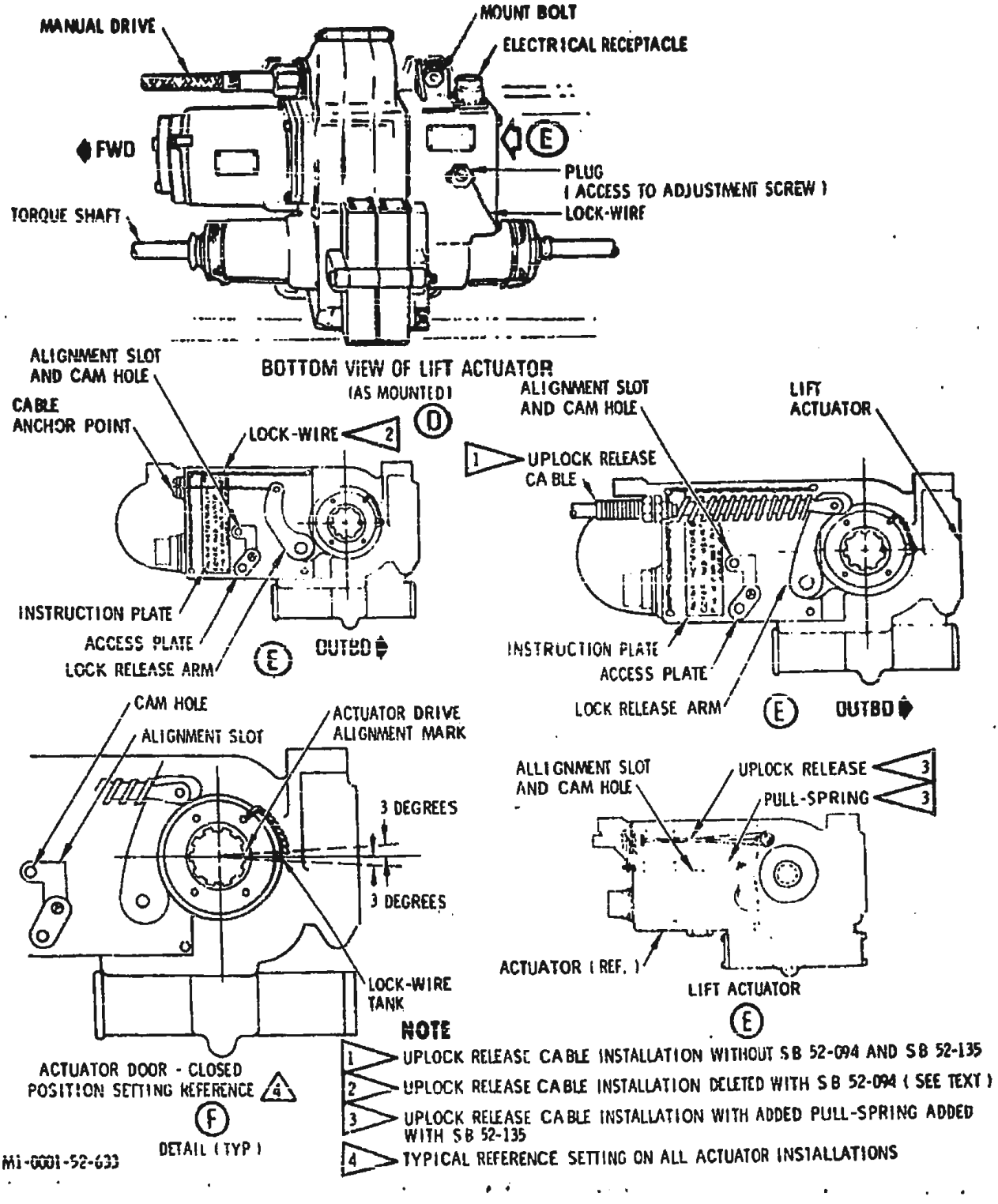




NOTE

1. BOLT WITH WASHER INSTALLED WITH FIXED PLATE NUT. TYPICAL THREE PLACES (AT FORWARD AND AFT OUTBOARD, AND AFT INBOARD ACTUATOR MOUNT FLANGES)
2. ON SOME AIRCRAFT THIS BOLT MAY BE INSTALLED AS SHOWN AT 1

Door Lift Actuator and Torque Shaft - Removal and Installation
Figure 401 (Sheet 1)



R Cargo Door Lift Actuator and Torque Shaft - Removal and Installation
R Figure 401 (Sheet 2)

R EFFECTIVITY: ALL
R
001B

CARGO DOOR GEARBOX (POWERED HINGE) - REMOVAL AND INSTALLATION

1. General

Two gearboxes are required to operate the cargo door. The gearboxes are located above the cargo door and are driven by torque shafts splined to the forward and aft sides of the cargo door actuator. The gearboxes are identical, however, the gearbox support structure in each cargo compartment differs slightly.

Two overhead cargo compartment panels must be removed to gain access to the C-1 and C-2 door gearboxes. The C-3 door gearboxes are accessible without panel removal.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Wood blocks, approximate 4 by 4 by 42 inches

Sealant, LAC Spec D-40-769A, Type II, or equivalent

3. Referenced Procedures

52-34-00 Cargo Door Actuation System - Adjustment and Test

52-34-01 Lift Actuator - Removal and Installation

4. Removal/Installation

The following procedures are based on removal of one gearbox. If two gearboxes are to be removed, the door should be removed first if working from the door-open position. If the door can be closed, the gearboxes may be removed with the door in the closed-and-latched position.

A. Removal

(1) Open cargo door electrically or manually until in the vertical position (hanging down from gearboxes) (Ref. 52-34-00).

(2) Support door along lower edge hooks with wood blocks supported by a stable stand, or equivalent.

R WARNING: DO NOT OPERATE CARGO DOOR WHILE MAINTENANCE IS BEING PERFORMED ON THE DOOR.

(3) Tag electrical and manual door controls.

(4) Gain access to gearboxes by removing overhead panels, as required (Ref. Fig. 401 or 402).

R CAUTION: TORQUE SHAFT MUST BE PROTECTED TO PREVENT SCRATCHING POLISHED SURFACE.

(5) Remove coupling from torque shaft engaging gearbox to be removed. Slide torque shaft into lift actuator sufficient to clear gearbox.

R WARNING: DO NOT ALLOW DOOR TO BE MOVED OR DISPLACED WHILE LIFTING ARM IS DISCONNECTED FROM ACTUATOR.

(6) Remove nuts, washers, and bolts from gearbox and lifting arm joint.

(7) Remove gearbox mount bolts from forward and aft sides.

(8) Remove gearbox. Retain loose shims for reinstallation.

B. Installation

(1) Position gearbox in support structure and install washers and bolts into six-bolt end of gearbox.

(2) Prepare bolts for installation at three-bolt end of gearbox.

(a) Brush a thin coat of sealant under bolt head and approximately one-half inch below head. Do not apply sealant on threads.

(3) Install each bolt and washer with laminated shim between gearbox and support structure. If shim is less than 0.065-inch thick, add another washer under head of bolt.

(4) Torque all bolts (both ends of gearbox). Lock-wire heads on six-bolt end of gearbox.

(5) Align lifting arm with gearbox and install bolts with washers and nuts.

(6) Remove door support and close door to latched-and-locked position.

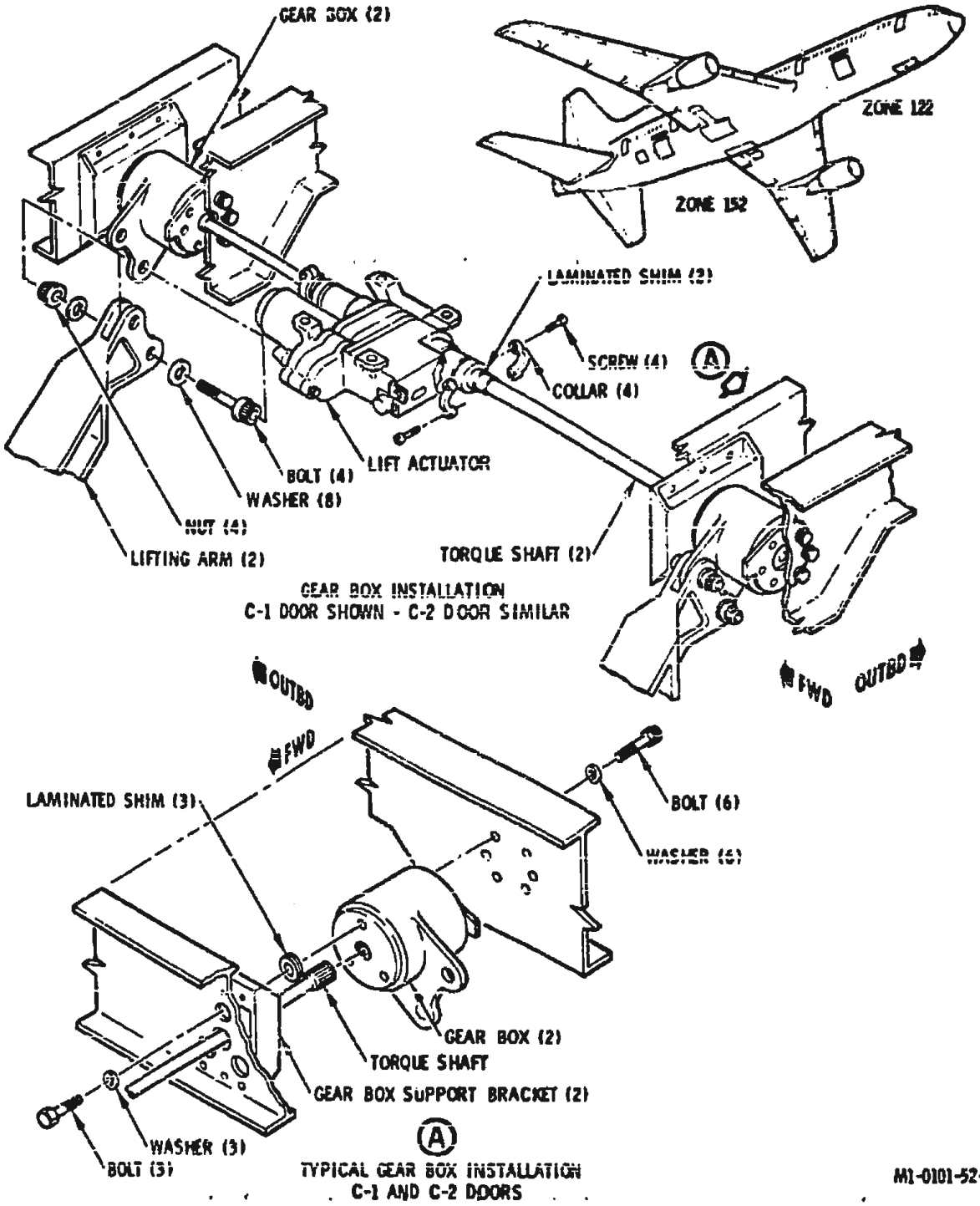
(7) Install torque shaft between actuator and gearbox (Ref. 52-34-01).

NOTE: Door should be closed and latched to perform Step 4B(7).

R (8) Install torque shaft coupling and check for correct shim clearance between coupling and lift actuator (Ref. 52-34-01). Lock-wire coupling screws.

(9) Install ceiling panels.

(10) Check door for proper operation (Ref. 52-34-00). Remove electrical and manual door control tags installed in Step 4A(3).

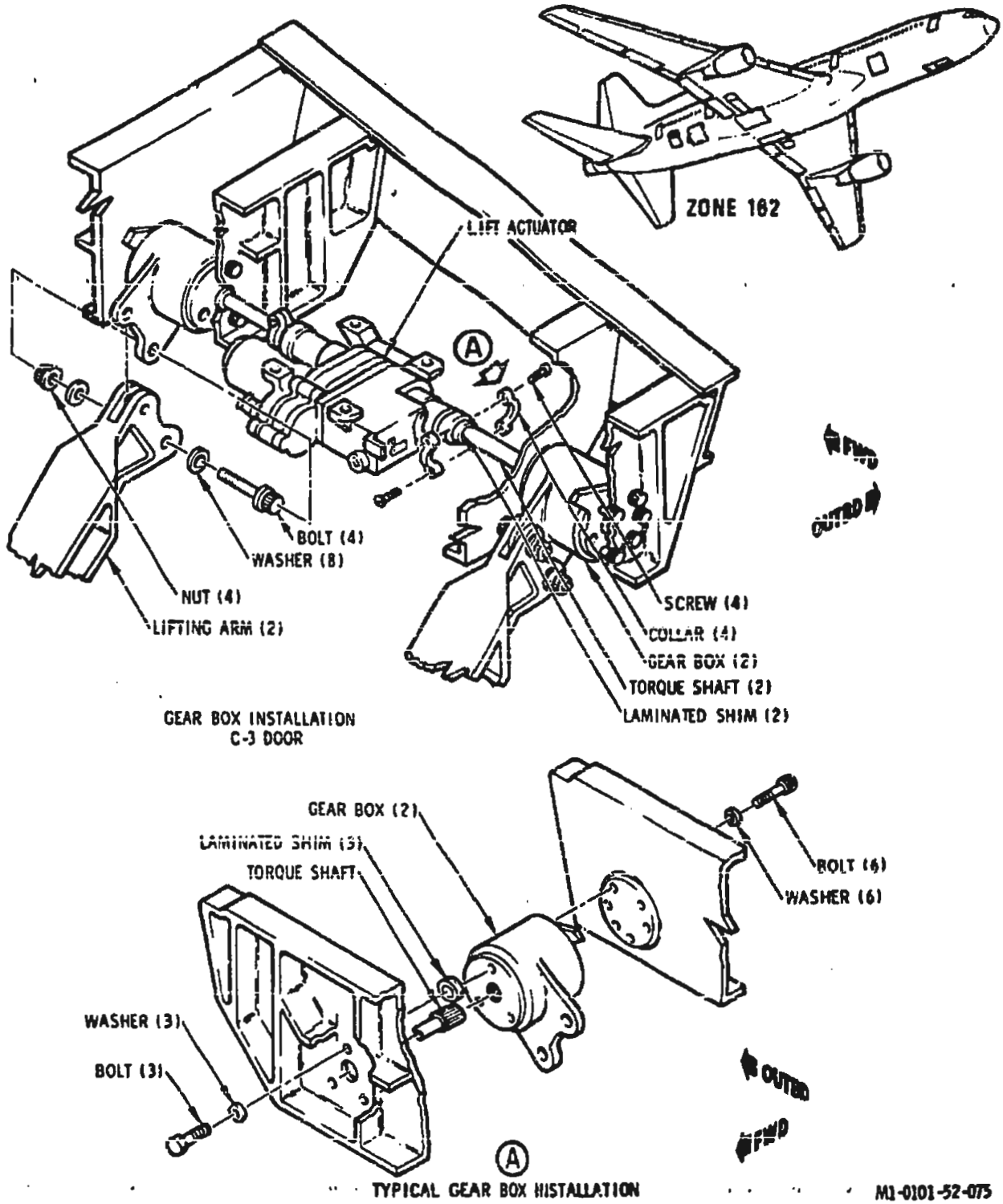


R
R
R

Gearbox (Powered Hinge), C-1 and C-2 Doors
Removal and Installation
Figure 401

EFFECTIVITY: ALL

0018



R Gearbox (Powered Hinge), C-3 Door
R Removal and Installation
R Figure 402

EFFECTIVITY: ALL

001B

R

CARGO DOOR TORQUE SHAFT - REMOVAL AND INSTALLATION

1. General

R Two torque shafts are installed above each cargo door.

To remove one or both torque shafts, the lift actuator should be removed. Refer to 52-34-01, Lift Actuator - Removal and Installation, for complete details.

RIGHT-ANGLE DRIVE GEARBOX - REMOVAL AND INSTALLATION

1. General

R One right-angle drive gearbox is located forward of each cargo door (Ref. Fig. 401, 402 and 403). This gearbox is used to raise or lower the cargo door manually. The C-1 door gearbox is located forward of the FS609 fuselage frame, between stringers 20 and 21, in zone 122. The C-2 door gearbox is located forward of the FS1523 fuselage frame, between stringers 19 and 20, in zone 152. The C-3 door gearbox is located forward of the FS1665 fuselage frame, between stringers 20 and 21, in zone 162.

On aircraft 001-031, replacement of the gearbox is difficult to accomplish at the C-1 and C3 cargo compartments. This is accomplished by replacing gearbox support structure fasteners with removable bolts and nuts.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Sealant, LAC Spec LCM-40-2180, Type II, Products Research Co. PR7401K, or equivalent

Low-adhesion Sealant, LAC Spec LAC-C-40-769A, Type II, Products Research Co. PR 1301 BT-K, or equivalent

Parting Agent, LAC Spec LCM22-1246, Ram Chemicals Inc., RAM225, or equivalent

3. Referenced Procedures

20-51-04 Environmental Sealing of Model L-1011 Airplane

52-34-00 Cargo Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Gain access to cargo compartment (Ref. 52-34-00).

(2) Remove cargo compartment side panel.

(3) Remove exterior access plate.

NOTE: The C-2 Compartment access plate is on the fairing forward of the cargo door.

R (4) Disconnect manual drive flex shaft from gearbox (Ref. Fig. 401, 402 and 403.

CAUTION: WHEN SEPARATING GEARBOX UPPER SECTION FROM BASE, WATCH FOR LOOSE BEARING.

(5) On aircraft 001-031, on the C-1 or C-3 door right-angle drive gearbox, remove four screws that mate gearbox upper section to gearbox base.

NOTE: At these locations the eight gearbox base mounting screws are difficult to remove. Replacement of the gearbox upper section (which contains the clutch and geartrain) is expedient.

(5) On aircraft 032-999, remove gearbox as follows:

(a) At the C-3 compartment, remove four bolts with washers that attach the gearbox support bracket to stringers number 20 and 21. Remove eight screws to separate right-angle drive gearbox from support bracket.

(b) At the C-1 compartment, remove eight bolts with washers and nuts (four from the gearbox support bracket side support tees, and four that attach the gearbox support bracket to the frame at FS 609). Remove eight screws to separate right-angle drive gearbox from support bracket.

(6) At C-2 door right-angle drive gearbox, remove eight base mounting screws.

B. Installation of C-1 and C-3 Right-angle Drive Gearboxes

(1) On aircraft 001-031, install right-angle drive gearbox at the C-1 or C-3 cargo compartment as follows (Ref. Fig. 401 and 403):

(a) Verify that bearing is installed in gearbox base. Mate gearbox upper section to gearbox base, making sure that the drive fitting is oriented toward the manual drive flex shaft.

(b) Install four screws to join upper and lower sections of gearbox, and lock-wire screws.

(c) Verify orientation of flex shaft casing (Ref. Fig. 403), then install manual drive flex shaft on gearbox and lock-wire.

(d) Verify manual operation of door (Ref. 52-34-00).

(1) On aircraft 032-999, right angle drive gearbox at the C-1 or C-3 cargo compartment as follows:

(a) Install gearbox on support bracket using eight screws.

(b) Install C-3 gearbox support with four bolts and washers. Install C-1 gearbox support bracket with eight bolts (four where bracket attaches to FS 609 frame, and four where support bracket mates with side support tees).

R (c) Verify orientation of flex shaft casing (Ref. Fig.
R 403), then install manual drive flex shaft on gearbox and lock-wire.

(d) Verify manual operation of door (Ref. 52-34-00).

(2) If exterior access plate seal is damaged, repair as follows:

(a) Remove damaged sealant from mounting flange and clean seal area.

(b) Brush light coat of parting agent on exterior access plate. Allow to air-dry.

(c) Brush light coat of sealant, approximately 0.020 inch thick, on the exterior access plate mounting flange.

(3) Install access plate with screws while sealant is wet.

(4) Install cargo compartment side panel.

C. Installation of C-2 Right-angle Drive Gearbox

(1) Clean gearbox mount area (Ref. 20-51-04).

(2) Brush light coat of parting agent on base flange of right-angle drive gearbox. Allow to air-dry.

(3) Brush light coat of sealant, approximately 0.020 inch thick, on fuselage skin area that interfaces gearbox.

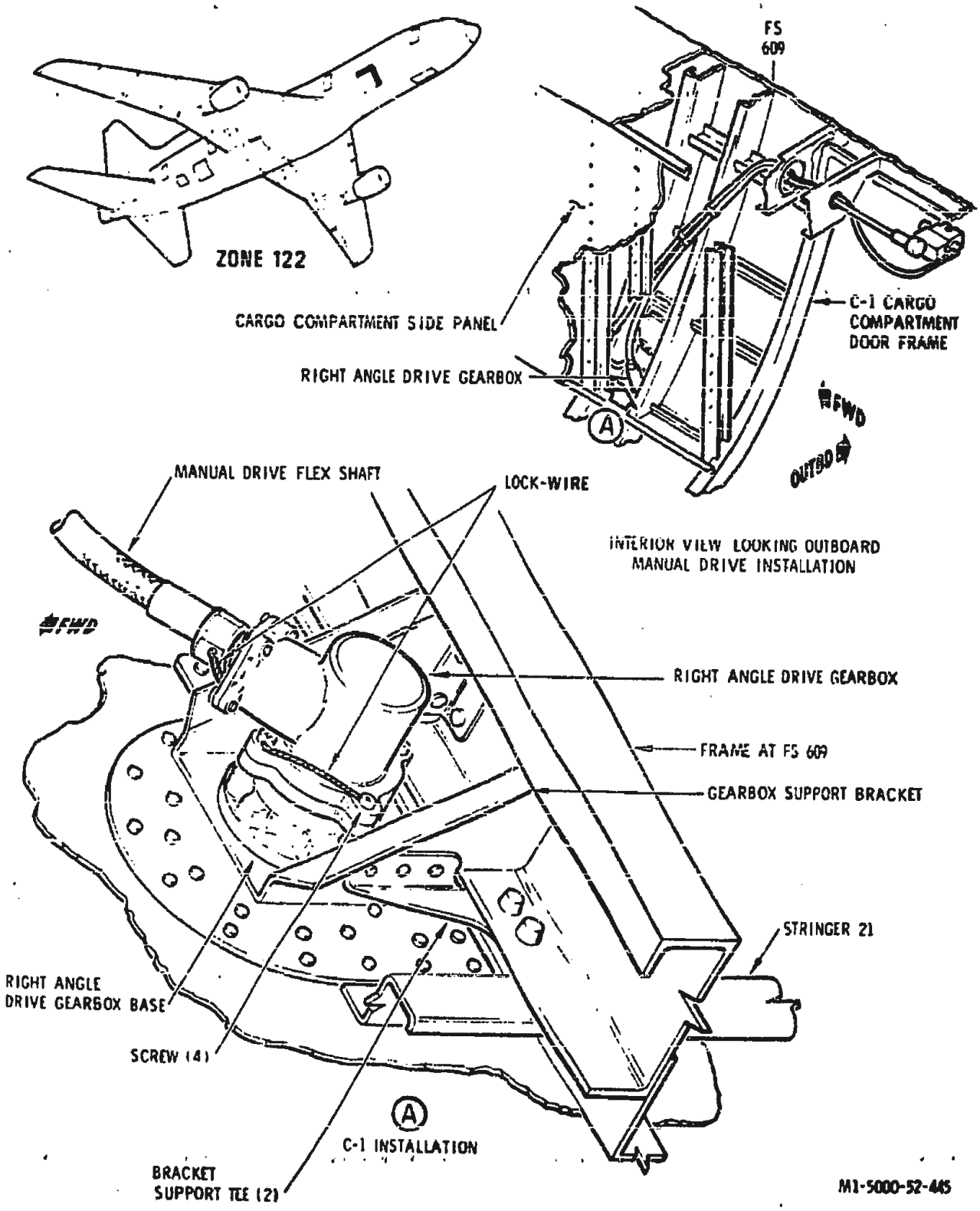
(4) Brush light coat, approximately 0.020 inch thick, of low-adhesion sealant under heads of all gearbox mounting screws (Ref. 20-51-04).

(5) Install gearbox on wet sealant with washers and screws.

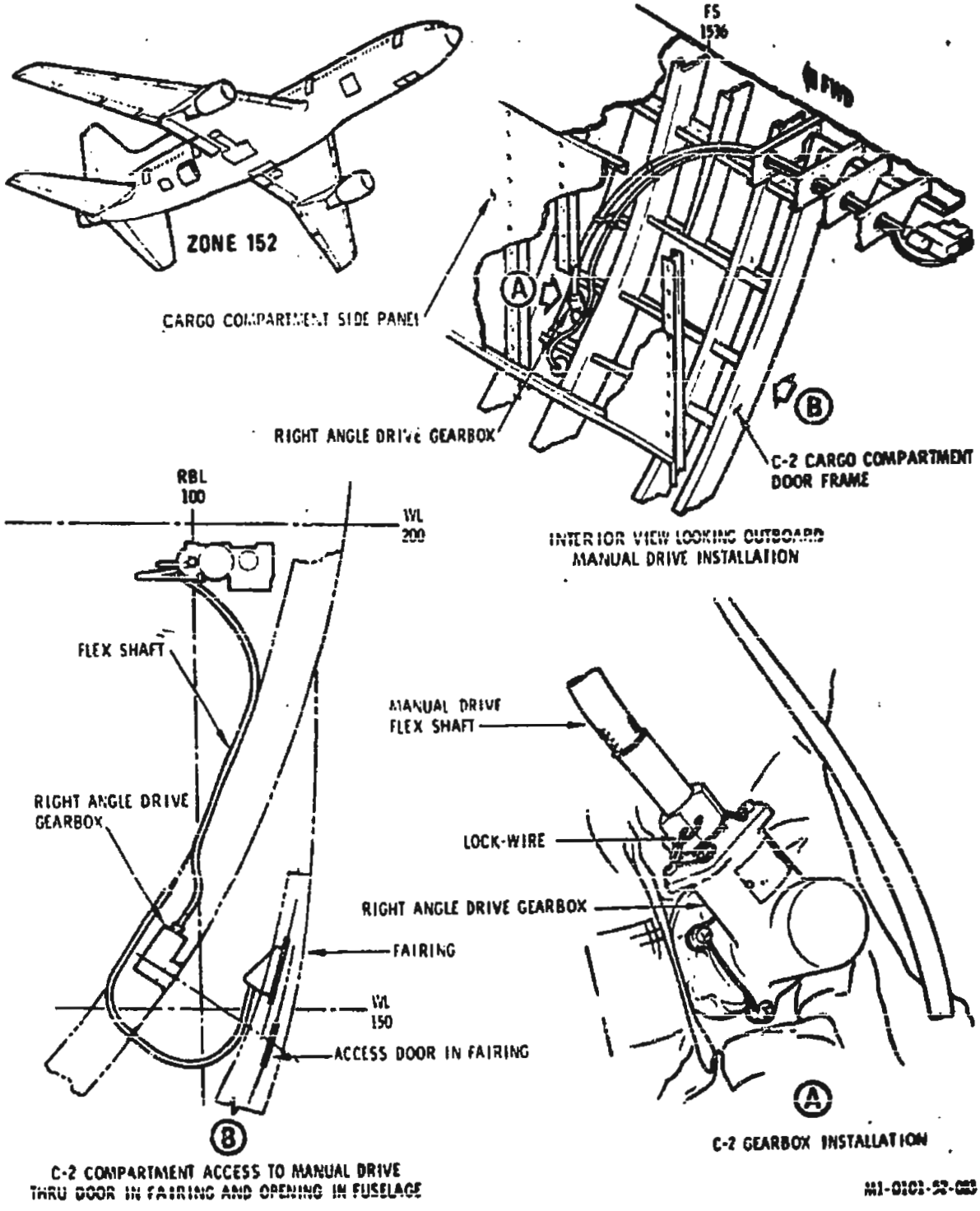
R (6) Verify orientation of flex shaft casing (Ref. Fig. 403), then install manual drive flex shaft on gearbox and lock-wire.

(7) Verify manual operation of door (Ref. 52-34-00).

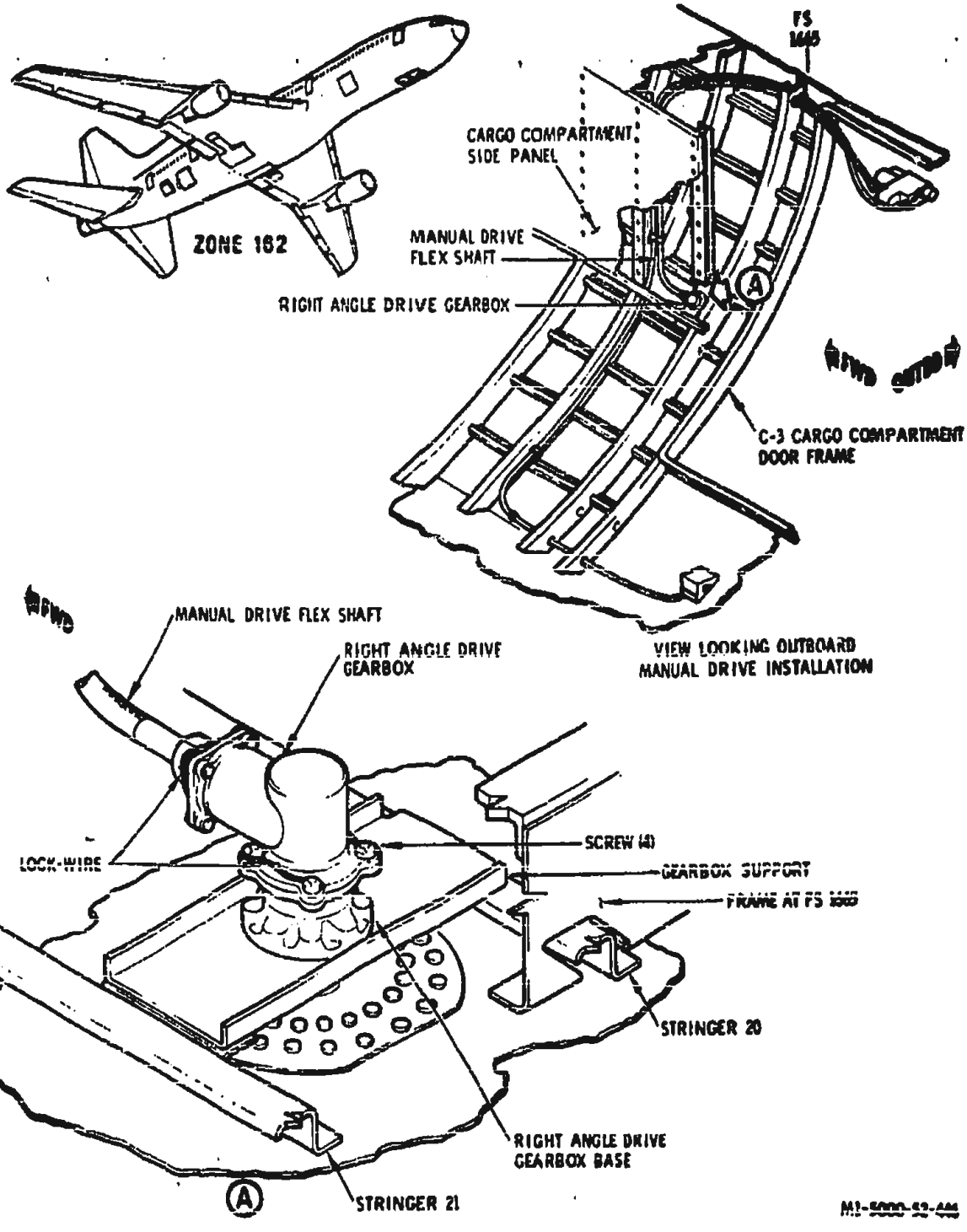
(8) Install fairing access plate.



Right-Angle Drive Gearbox, C-1 Door
Removal and Installation
Figure 401



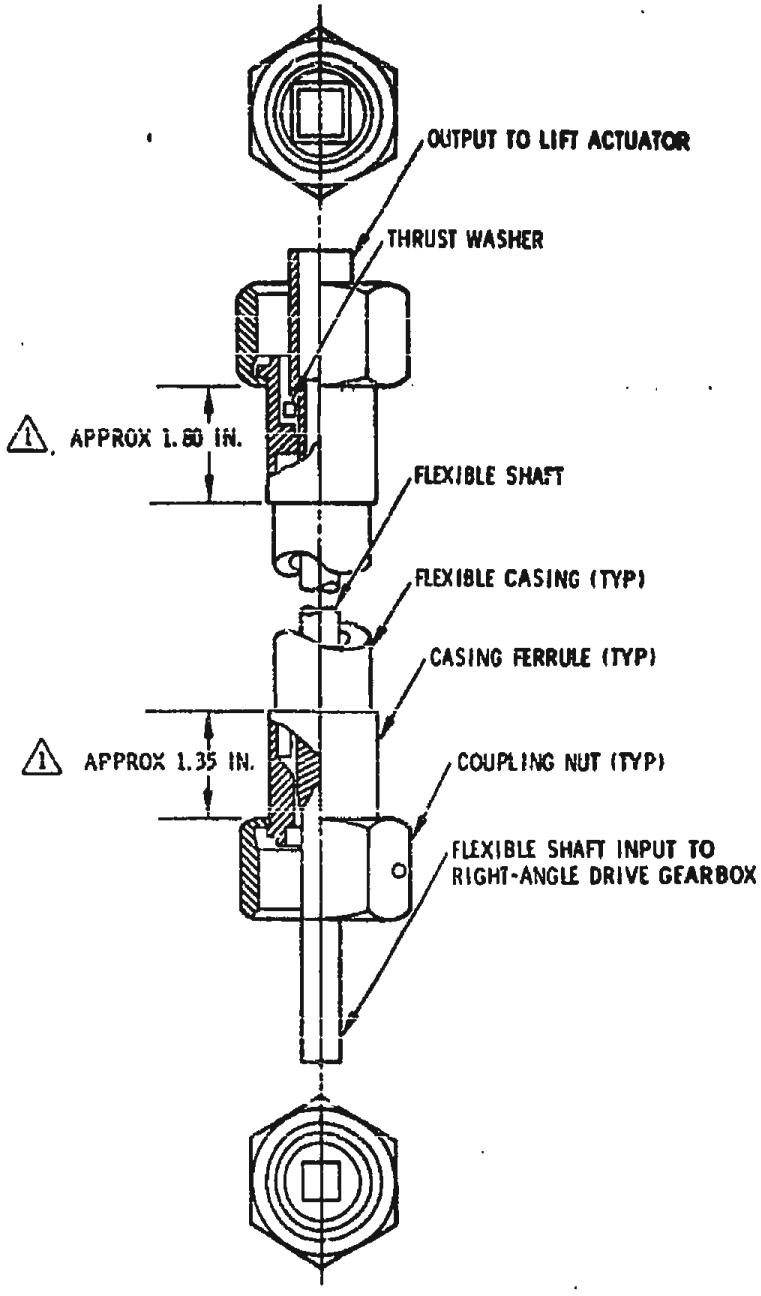
Right-Angle Drive Gearbox, C-2 Door
Removal and Installation
Figure 402



R Right-Angle Drive Gearbox, C-3 Door
R Removal and Installation
R Figure 403

EFFECTIVITY: ALL

001B



NOTE

1 USE FERRULE LENGTH TO CHECK FOR CORRECT ORIENTATION OF THE MANUAL DRIVE FLEX SHAFT CASING. THE SHORTER FERRULE MUST BE ON THE INPUT (LOWER) END OF THE SHAFT

M1-0002-52-435

R R Manual Drive Flex Shaft Assembly
Figure 404

CARGO DOOR OPENING MECHANISM - REMOVAL AND INSTALLATION

1. General

The door opening mechanism of each of the three cargo doors is essentially the same, except that the C-3 door mechanism is smaller. The opening mechanism is attached to the fuselage structure and door structure on lower right side of fuselage. Differences in removal and installation procedures are covered by reference to Figures 401, 402, and 403.

2. Equipment and Materials

Cotter Pins, MS24665-159, or equivalent

3. Referenced Procedures

	52-31-01	Forward and Center Cargo Compartment Doors (C-1 and C-2) - Removal and Installation
	52-31-01	Forward and Center Cargo Compartment Doors (C-1 and C-2) - Adjustment and Test
R	52-34-00	Cargo Door Actuation System - Adjustment and Test

4. Removal/Installation

A. Removal

(1) Remove cargo door (Ref. 52-31-01, Removal and Installation).

(2) Manually crank opening mechanism down to a practical working position.

(3) Support lifting arms and remove nuts, washers, and bolts where lifting arms attach to door lifting gearboxes.

(4) Support stabilizer link rods, and remove cotter pins and stabilizer link attach pins from the upper stabilizer support fitting.

(5) Remove opening mechanism.

(6) Measure and record lengths of stabilizer link rods, and adjusting link rods.

B. Installation

WARNING: DO NOT OPERATE CARGO DOOR MECHANISM WHILE MAINTENANCE IS BEING PERFORMED.

(1) Adjust lengths of stabilizer link rods and adjusting link rods to the same lengths as those recorded for the last removed door opening mechanism.

(2) Position opening mechanism lifting arms for attachment to door lifting gearboxes. Install bolts, washers, and nuts.

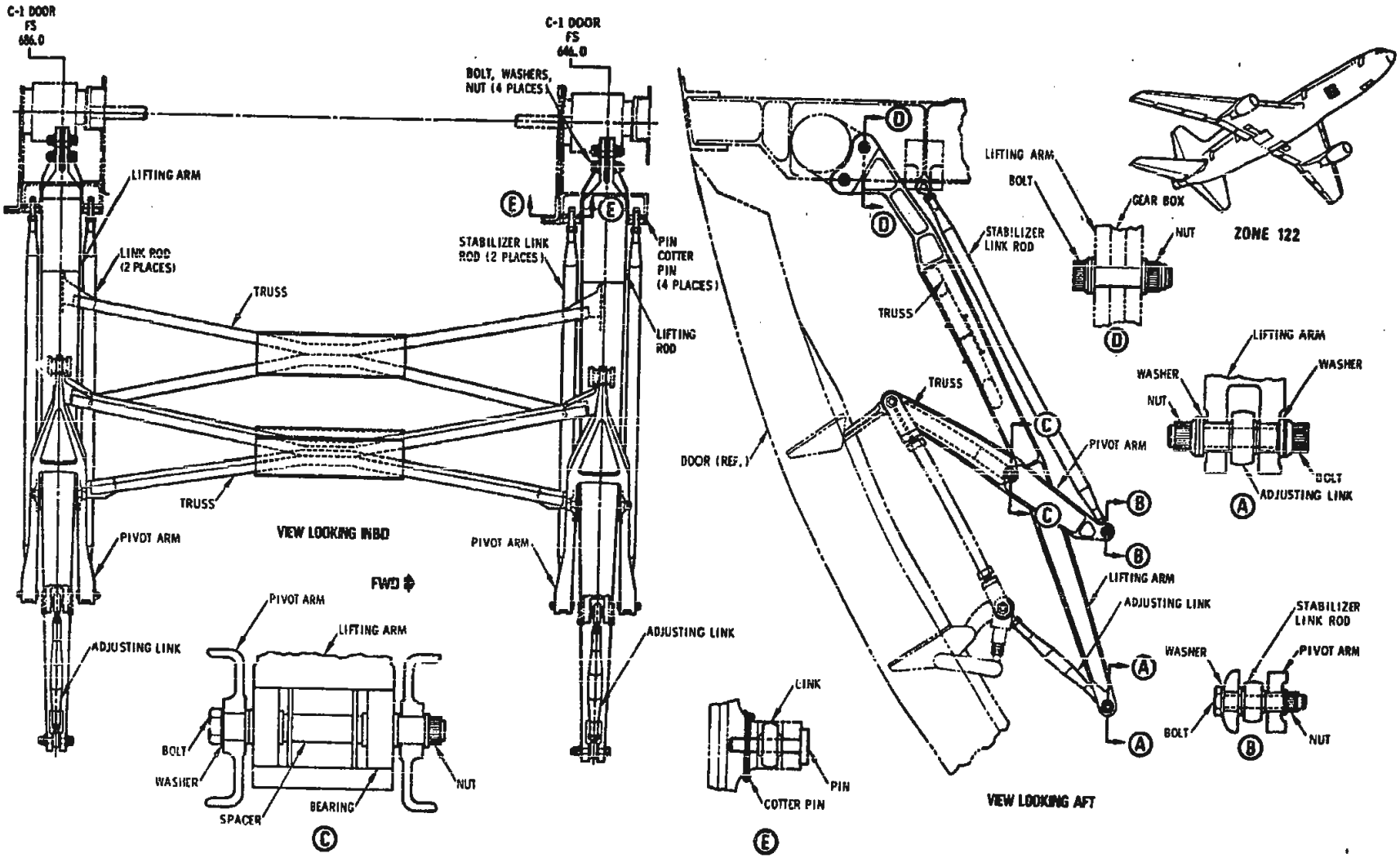
(3) Using stabilizer link attach pins, attach stabilizer link rods to overhead support fittings.

(4) Install new locking cotter pins through stabilizer attach pins.

(5) Manually crank door opening mechanism to fully open position.

(6) Install cargo door (Ref. 52-31-01, Removal and Installation).

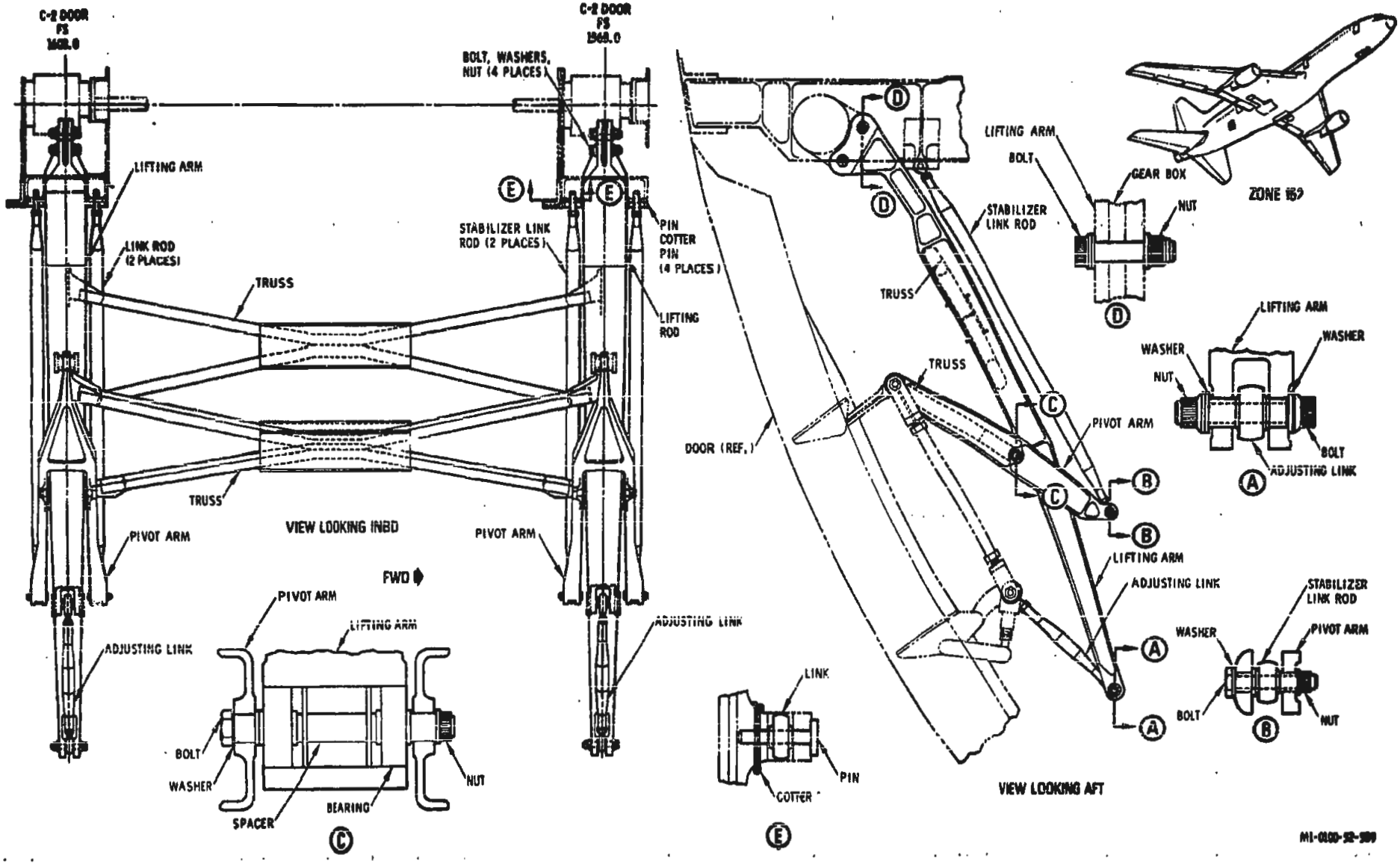
R (7) Perform Operational Test on door (Ref. 52-34-00).



R C-1 Cargo Door Opening Mechanism - Removal and Installation
R Figure 401

EFFECTIVITY: ALL

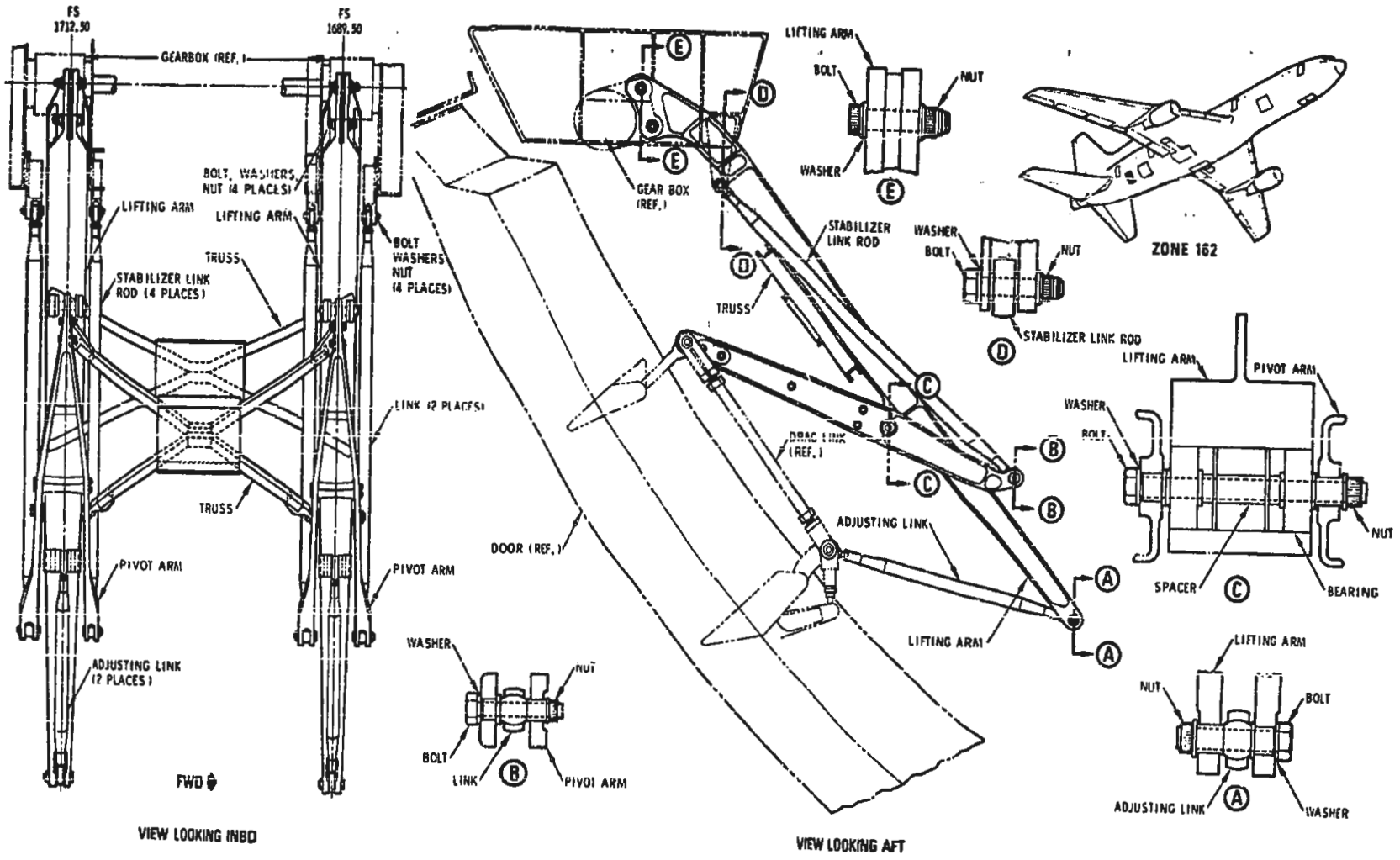
001B



R C-2 Cargo Door Opening Mechanism - Removal and Installation
R Figure 402

EFFECTIVITY: ALL

0018



R R C-3 Cargo Door Opening Mechanism - Removal and Installation
Figure 403

R R 001B EFFECTIVITY: ALL

CARGO DOOR ROLLER GUIDE ASSEMBLY - MAINTENANCE PRACTICES

1. Maintenance Practices

The following procedure outlines the steps required to close a cargo door if one corner roller guide fitting located on the door surround structure forward or aft frame, or its interfacing roller on the door is damaged, inoperative, or missing.

WARNING: IF LOSS OR DAMAGE OF CARGO DOOR CORNER ROLLER GUIDE FITTING OR ROLLER RESULTS IN ANY DAMAGE TO THE FUSELAGE OR DOOR STRUCTURE, DAMAGE MUST BE REPAIRED IN ACCORDANCE WITH PROPER STRUCTURAL REPAIR MANUAL PROCEDURES PRIOR TO NEXT FLIGHT.

2. Referenced Procedure

52-34-00 Cargo Door Actuation System - Maintenance Practices

3. Deactivation

A. General

If one corner roller guide or its interfacing roller is damaged, missing, or inoperative to the extent that normal door closing operation is not possible, proceed as follows:

CAUTION: BOTH LIFTING CAM GUIDES AND ADJACENT LIFTING ARM ROLLERS AT THE CENTER OF THE DOOR FRAMES MUST BE OPERATIVE.

R (1) On galley left circuit breaker panel, zone 131, open and tag applicable cargo door circuit breakers ACTUATOR and CONTROL.

(2) Manually operate door in closing direction until door rollers start to enter the forward and aft, upper and lower corner roller guides.

(3) Push on corner of door corresponding to inoperative guide fitting while manually closing and latching door.

NOTE: If circumstances warrant, one door corner roller, or its interfacing fitting, may be removed to permit door closing.

(4) After door is closed, latched, and locked, deactivate cargo door (Ref. 52-34-00).

(5) Install appropriate placard in cockpit, identifying deactivated cargo door.

(6) Make appropriate entry in aircraft log book.

R B. Opening Deactivated Door

R When cargo door is closed with missing or damaged cargo door
R roller and/or roller guide fitting the following procedure
R should be followed:

R (1) Unlock door electrically or manually.

R NOTE: If operated electrically, the cargo door
R ACTUATOR and CONTROL circuit breakers for the
R deactivated door must be closed.

R (2) Unlatch door manually.

R (a) While unlatching door, check that door moves up
R freely without binding. If door binds during
R unlatching continue as follows, if not refer to
R Step 3B(3).

R (b) Apply manual pressure inboard on door near
R missing/damaged roller guide or roller while
R unlatching door.

R (c) To assure successful unlatching operation, verify
R that skin at top of door clears adjacent fuselage
R interfacing skin. If it does not clear,
R manipulate door skin by pushing in on lower end of
R door, or use a strip of metal between those edges
R to permit door to slide by door opening.

R (3) When door is unlatched, normal door opening procedures
R should be used (Ref. 52-34-00).

R R # CARGO DOOR LOWER PRESSURE HOOK PIVOT PIN INSPECTION AND CHECK

R 1. General

R R R The lower pressure hook pivot pins interface the cargo door lower hooks at the C-3 door (2 places), and at the C-1 door (3 places).

R 2. Inspection/Check

R R A. Permissible wear limits for lower pressure hook pivot pin P/N 1561513-101:

R (1) Pin diameter not less than 0.482 inch.

R (2) Length of wear not less than 30 times wear depth.

R R (3) Wear area must be smooth, and free of stress-rising imperfections.

CARGO DOOR HOOK - INSPECTION AND CHECK

1. General

R The cargo door upper and lower hooks can be visually inspected for wear. If wear is evident, measure the width of base metal exposed. Wear depth measurements need only be made if wear pattern width dimensions are exceeded.

2. Inspection/Check

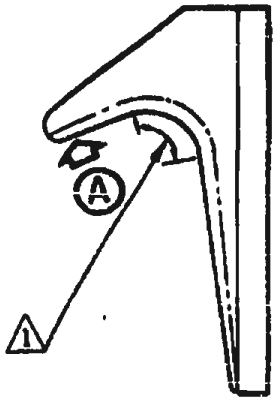
A. Inspect cargo door upper and lower hooks for wear as follows:

(1) Visually check for wear through hook chrome plating into base metal.

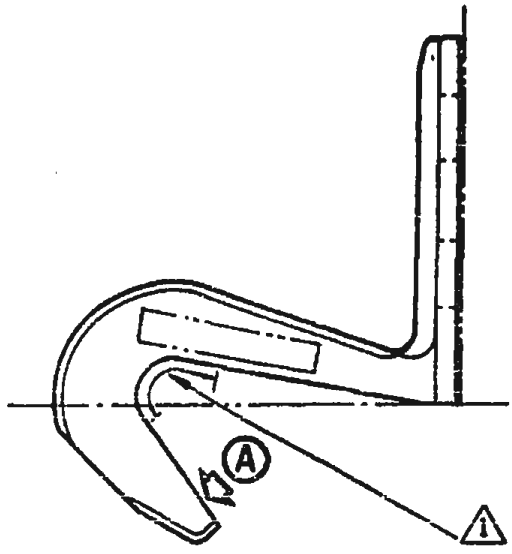
(2) Measure width of exposed base metal in wear pattern. If wear does not exceed maximum dimension (Ref. Fig. 601), hook is serviceable.

(3) If exposed base metal is greater than maximum allowed, measure depth of groove. If groove depth is 0.020 inch or less, hook is serviceable.

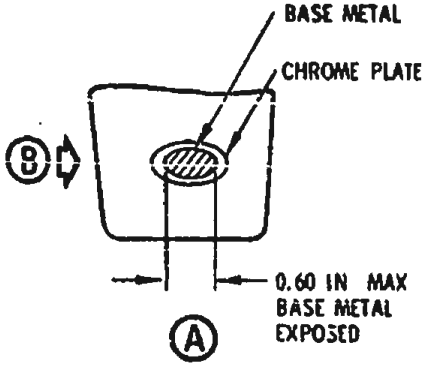
(4) If wear is evident in an area other than the normal pivot pin contact area, improper rig of the cargo door is indicated and corrective action must be taken.



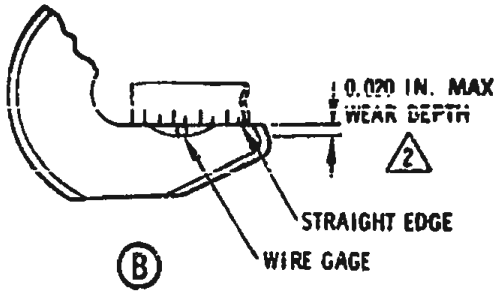
TYPICAL LOWER HOOK



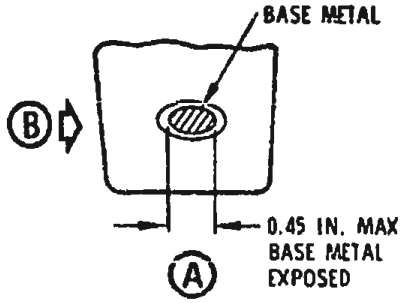
TYPICAL UPPER HOOK



WEAR PATTERN FOR ALL HOOKS
EXCEPT C-2 DOOR LOWER HOOKS



HOOK WEAR DEPTH LIMITS 2
(TYPICAL ALL HOOKS)



WEAR PATTERN FOR
C-2 DOOR LOWER HOOKS ONLY

NOTE

1. WEAR WITHIN THIS AREA INDICATES IMPROPER RIGGING OF DOOR. CORRECTIVE ACTION IS REQUIRED
2. MEASUREMENT OF WEAR DEPTH IS ONLY REQUIRED IF WEAR PATTERN LIMITS ARE EXCEEDED (REF. DETAIL A). USE STRAIGHT EDGE AND WIRE GAGE AS REQUIRED.

MI-0001-52-433

R
R

Cargo Door Hook Inspection and Check
Figure 601

SERVICE DOORS - DESCRIPTION AND OPERATION

1. General

The service doors are the major doors used by personnel for access to various service areas. The service doors included in this chapter are:

G-1 galley service door, zone 822

R Forward electronic service center door

Environmental control system doors

S-2 mid electrical service center door

S-2 mid electrical service center fairing door

GALLEY DOOR - DESCRIPTION AND OPERATION

1. General

The galley service door (Ref. Fig. 1 and 2) is located on the lower right side of the fuselage, approximately 10 feet aft of the forward cargo compartment at FS 810.6, zone 822.

The galley door structure is of conventional eggcrate construction consisting of upper, lower, and side frame members; horizontal beams and vertically oriented intercostals. All primary structural members are made of 7075-T6 aluminum alloy. The door outer skin is made of 2024-T3 aluminum.

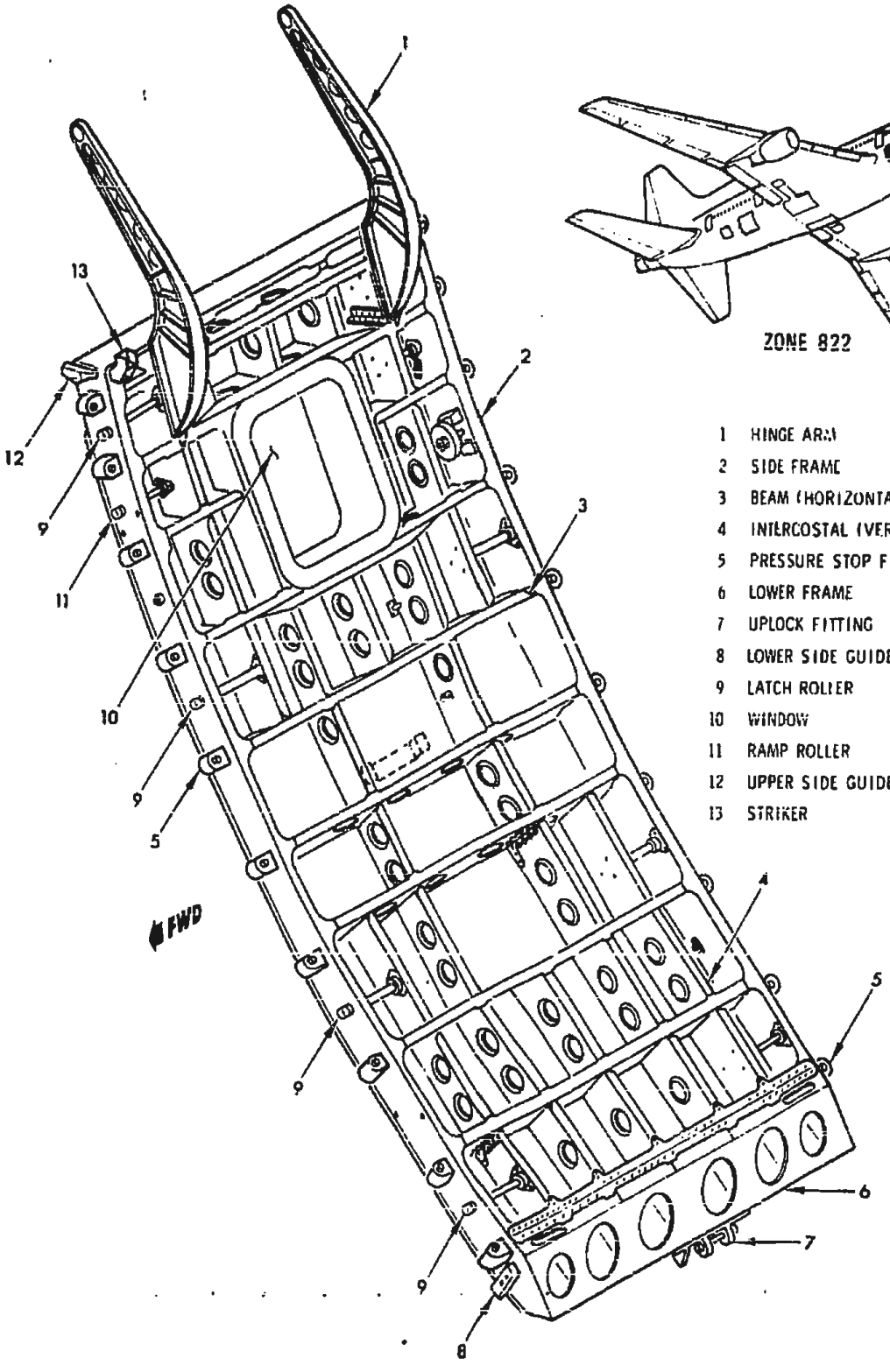
The door is a hinged, inward-opening, plug-type unit. The door provides outside access to the galley area located below the passenger compartment.

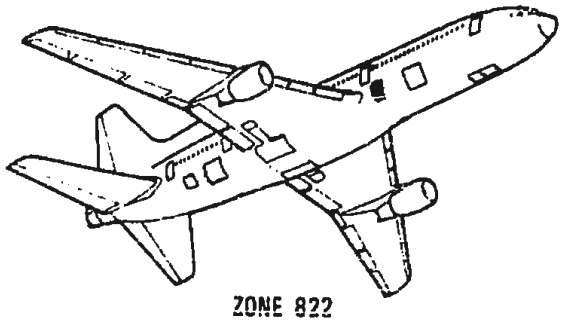
The door, which is spring counterbalanced, is manually operable from inside or outside the aircraft.

The door latch mechanism is moved to the open or closed position by manually operating the handle on the fuselage next to the door opening. The door is supported at the top edge by two pivot bearing hinges.

Two retractor spring assemblies provide counterbalance support to relieve the door weight. The mechanism has a built-in speed limiter. The springs, idler pulleys, and cables are located next to the door opening at zone 132.

Manually operated uplocks are provided to retain the door overhead, when in the fully opened position.



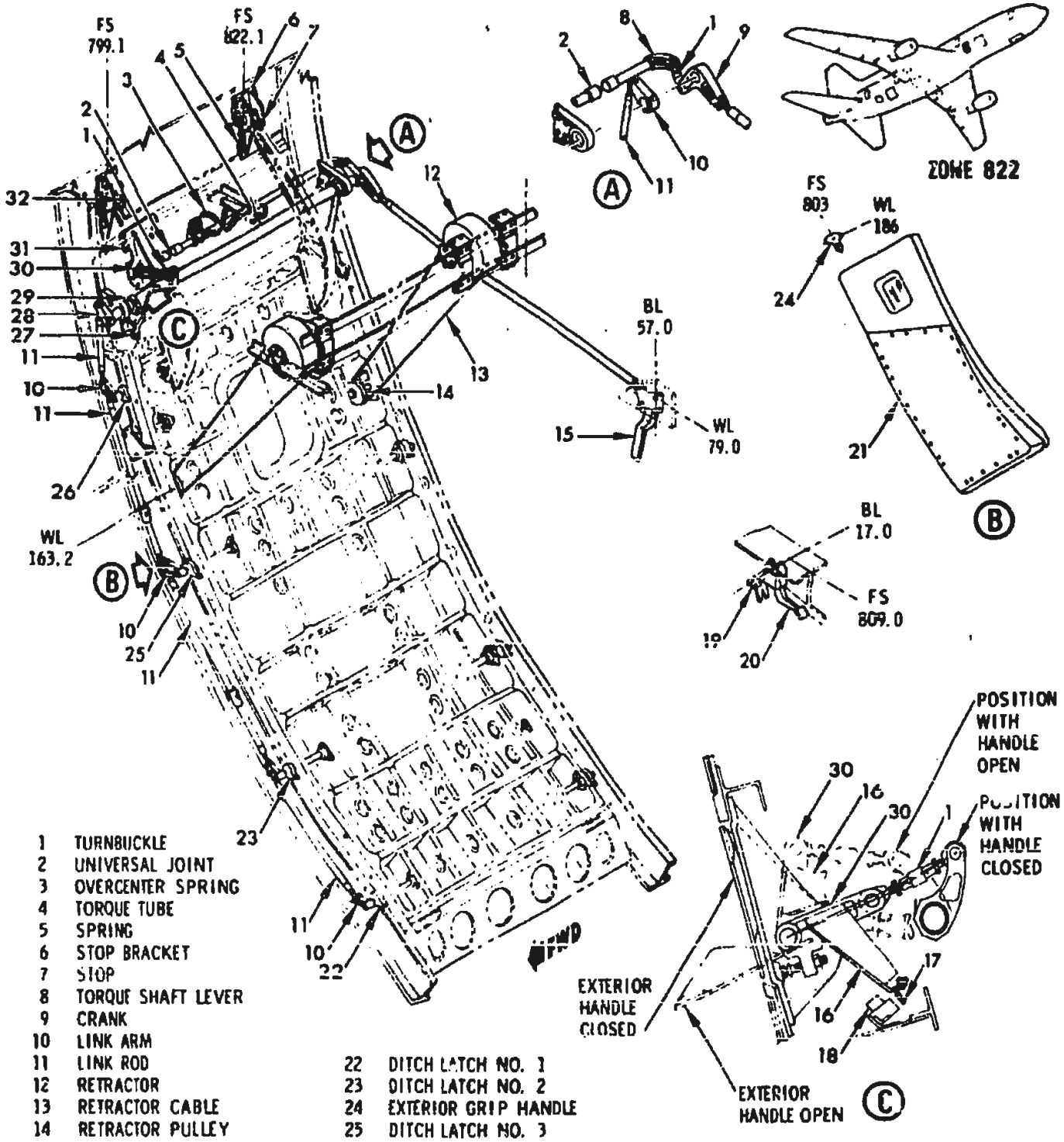


ZONE 822

1 HINGE ARM
2 SIDE FRAME
3 BEAM (HORIZONTAL MEMBERS)
4 INTERCOSTAL (VERTICAL MEMBERS)
5 PRESSURE STOP FITTING (TYP)
6 LOWER FRAME
7 UPLOCK FITTING
8 LOWER SIDE GUIDE PAD
9 LATCH ROLLER
10 WINDOW
11 RAMP ROLLER
12 UPPER SIDE GUIDE PAD
13 STRIKER

HH 4999
M1-A00-52-022

G-1 Galley Door Structure
Figure 1



1	TURNBUCKLE	22	DITCH LATCH NO. 1
2	UNIVERSAL JOINT	23	DITCH LATCH NO. 2
3	OVERCENTER SPRING	24	EXTERIOR GRIP HANDLE
4	TORQUE TUBE	25	DITCH LATCH NO. 3
5	SPRING	26	DITCH LATCH NO. 4
6	STOP BRACKET	27	PAWL ARM LINK
7	STOP	28	ARM
8	TORQUE SHAFT LEVER	29	INTERLOCK COLLAR
9	CRANK	30	EXTERIOR HANDLE ARM
10	LINK ARM	31	HOUSING
11	LINK ROD	32	STOP ARM
12	RETRACTOR		
13	RETRACTOR CABLE		
14	RETRACTOR PULLEY		
15	INTERIOR HANDLE		
16	TARGET SUPPORT BRACKET		
17	TARGET		
18	PROXIMITY SENSOR		
19	GUIDE		
20.	UPLOCK ARM		
21	FAIRING		

HH 5027
M1-0101-52-023

R G-1 Galley Door Actuation Mechanism
R Figure 2

R # GALLEY DOOR - REMOVAL AND INSTALLATION

R 1. General

R This procedure outlines the steps necessary to remove and
R replace the galley door.

R 2. Equipment and Materials

R Holding Pin, 0.062 inch diameter by 1.5 inch steel rod

R Cotter pins, MS24665-151, and MS24665-298

R Door Support Dolly with protective padding

R 3. Referenced Procedure

R 52-41-01 Galley Door - Adjustment and Test

R 4. Removal/Installation

R A. Removal

R (1) Close galley door and verify latching mechanism is in
R unlatched position.

R (2) Remove access plate over door idler pulley as required
R for removal of retractor cable from pulley (Ref. Fig.
R 401).

R NOTE: Removal Procedures for both retractor spring
R cables are the same.

R (3) Insert holding pin in retractor fuzee holding pin hole
R (Ref. Fig. 401).

R WARNING: RETRACTOR SPRING FUZEE CAN ROTATE WITH A FORCE OF
R UP TO 64 POUNDS. DO NOT REMOVE HOLDING PIN FROM
R FUZEE WITHOUT FIRST RESTRAINING FUZEE WITH A
R WRENCH OR HOLDING THE CABLE.

R (4) On galley door, remove nut from idler pulley shaft and
R disengage or remove three cable guards.

R (5) Open door slightly to disengage retractor cable from
R idler pulley.

NOTE: An alternate procedure to disengage the cable from the idler pulley is to remove nut and cable guards from galley door idler pulley, then firmly and carefully disengage cable from pulley, and slowly allow it to retract into retractor.

(6) Remove fairing between galley door pivot arms.

(7) Disconnect electrical plug for galley latch closed switch located on the door surround structure just above the upper right hand corner of the door.

(8) On aircraft 001-031, remove nuts, washers, bushings, and pivot shaft from galley door pivot arms and save for later use (Ref. Fig. 401).

R (8) On aircraft 032-999,
R remove nuts, washers, and pivot shaft bolts from galley
R door pivot arms and save for later use (Ref. Fig. 401).

NOTE: Galley door weighs approximately 115 pounds.

(9) Remove door through opening and lower to padded support dolly.

B. Installation

(1) Raise door through opening and support in place for installation. Verify that door latching mechanism is in unlatched position.

(2) On aircraft 001-031, install pivot shaft, bushings, washers, and nuts to fasten galley door pivot arms to pivot arm brackets. Bushings, should be installed through spring loaded eyebolts and aligned so flat sides of bushing fit into slot of bracket.

NOTE: Insure that pivot shaft goes through both spring loaded eyebolts and bracket slots and not just through bracket slots (Ref. Fig. 401).

R (2) On aricraft 032-999,
R install pivot bolt, washers, nuts to fasten galley door
R pivot arm to pivot arm bracket.

NOTE: Insure that pivot bolt goes through both spring loaded eyebolts and bracket slots and not just through bracket slots (Ref. Fig. 401).

(3) Open galley door approximately 4 inches for installation of retractor cable.

(4) Verify that idler pulley on door is ready for engagement of cable assembly as follows:

(a) Access plate removed.

(b) Three cable guards clear of idler pulley.

NOTE: Installation procedures for both retractor spring cables are the same.

(5) Pass cable loop through idler pulley access plate, and engage cable around idler pulley. If cable is too short, perform the following:

(a) Restrain cable assembly by pulling out on cable from fuzee.

(b) While restraining cable, remove holding pin.

WARNING: RETRACTOR SPRING FUZEE CAN ROTATE WITH A FORCE OF UP TO 64 POUNDS. DO NOT REMOVE HOLDING PIN FROM FUZEE WITHOUT FIRST RESTRAINING FUZEE WITH A WRENCH OR HOLDING THE CABLE.

(c) Pull out on cable until cable loop can be engaged around cable idler pulley.

NOTE: If the alternate procedure (to remove the cable) was used and the cable loop is fully retracted, hold cable firmly, pull cable loop through idler pulley access, and engage cable around idler pulley.

(6) Engage three guards over idler pulley, tighten nut and install cotter pin.

(7) Install idler pulley access plates with screws.

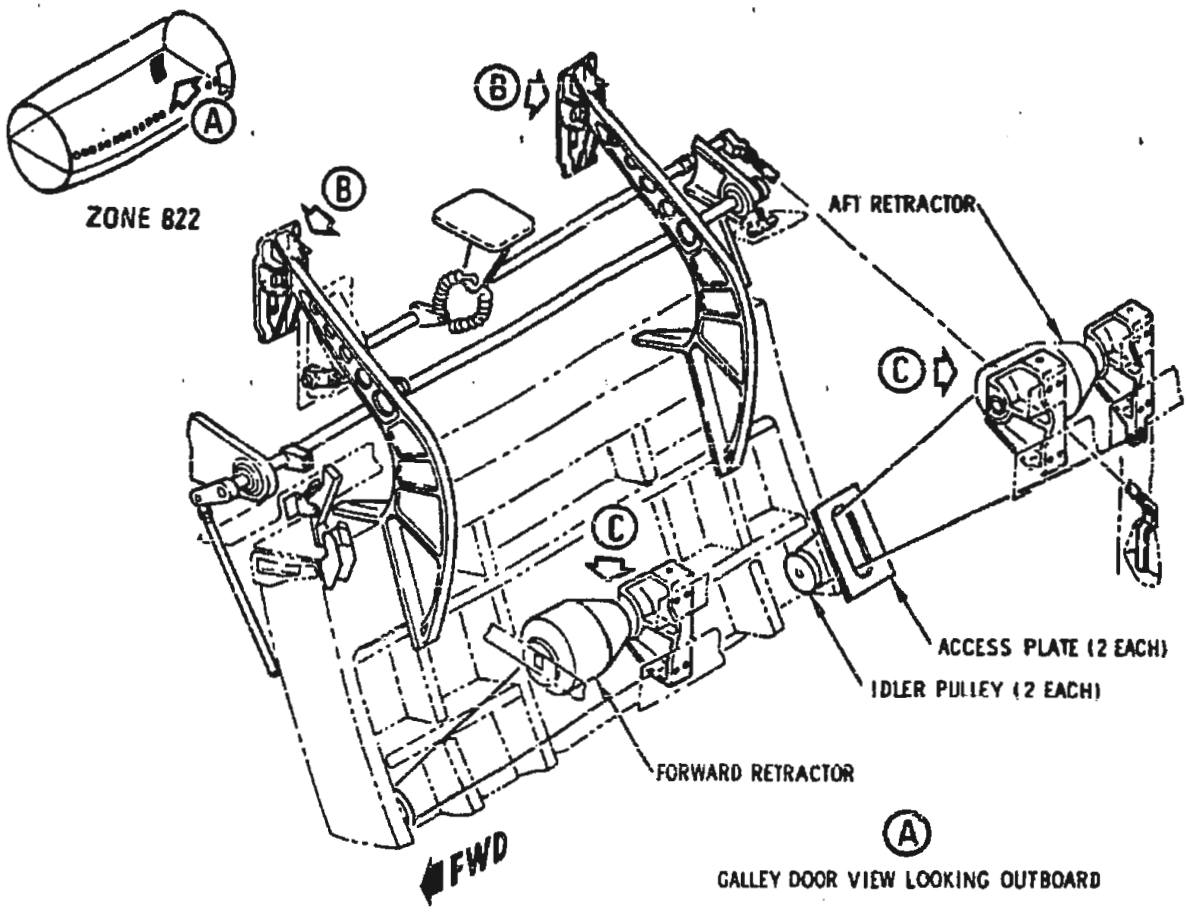
(8) Connect electrical plug for galley door latch closed switch disconnected in Step 4A(7).

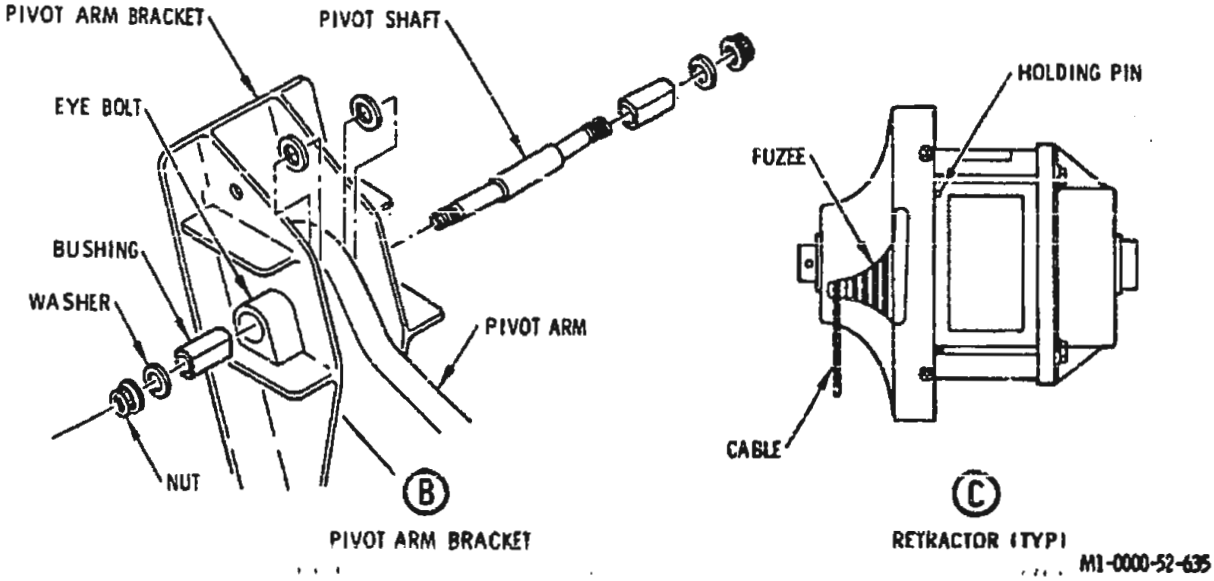
(9) If the original door is being reinstalled, check for proper ditch latch operation, latch closed switch operation, and door warning light operation (Ref. 52-71-00).

(10) If new door is being installed, accomplish galley door - adjustment and test, (Ref. 52-41-01, 501) to verify door operation.

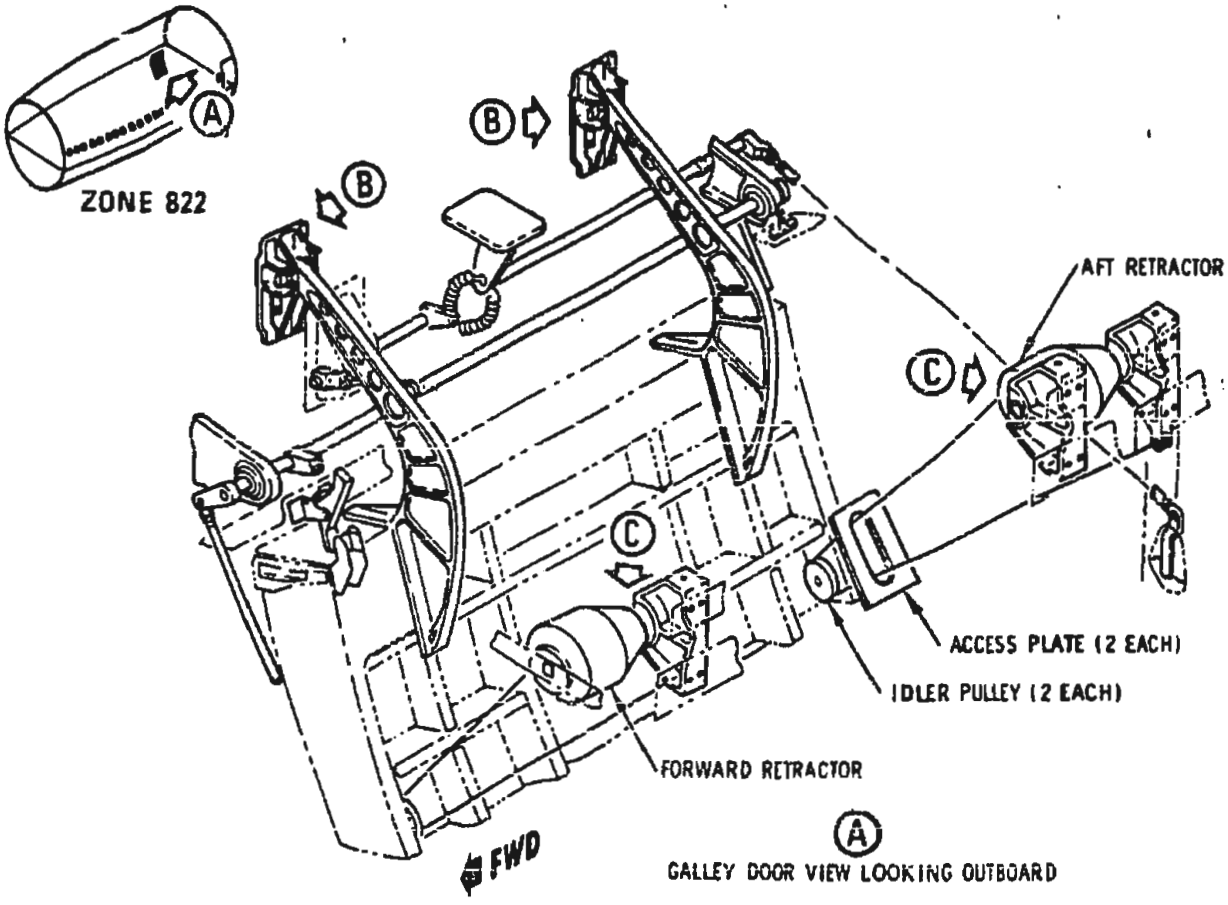
(11) Install fairing between galley door pivot arms.

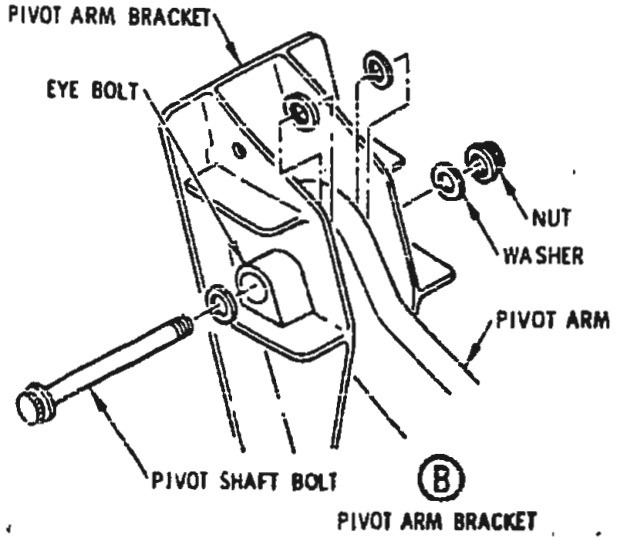
(12) Close door.

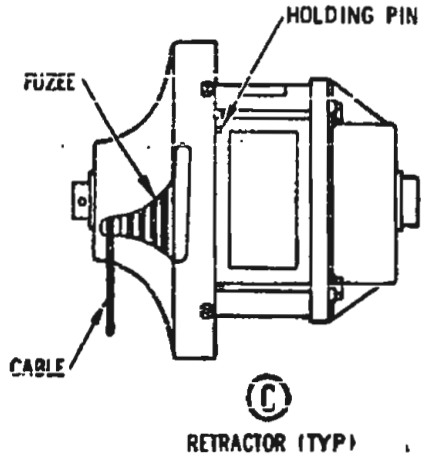




Galley Door - Removal and Installation
Figure 401







M1-0000-52-636

R R Galley Door - Removal and Installation
Figure 401

GALLEY DOOR - ADJUSTMENT AND TEST

1. General

This procedure outlines the rigging adjustment necessary to position a galley door in the opening so that the door will operate correctly. Steps to fair the door with the fuselage are included.

2. Equipment and Materials

Assembly Tool, Galley Door Ramp LAC P/N 1506404-901 AT-2

Check Fixture, Galley Door Ditch Latch/Roller, LAC P/N 1506404-901CF, or equivalent

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Sealant, LAC Spec LCM-40-2180, Type II, Products Research Co. PR 7401K, or equivalent

Shim stock, 1.0 by 1.0 inch by 0.080-inch thick

Grease, MIL-G-23827

R Force gage, chatillon 0-100 lb. capacity, Model DPPH 100, or
R equivalent

3. Referenced Procedures

25-61-18	Emergency Egress Table - Removal and Installation
52-41-03	Door Seal - Removal and Installation
52-42-04	Door Ditch Latch - Adjustment and Test

4. Adjustment/Test

A. Preparation for Rigging/Adjustments

(1) Remove seal from door (Ref. 52-41-03).

(2) Remove emergency egress table from door (Ref. 25-61-18), if installed.

(3) Remove door liner, if installed.

(4) Verify that ditch latch rollers are lubricated and turn freely. Remove seal plug from end of roller and pack with MIL-G-23827 grease.

NOTE: Lubrication pressure may extend bearings in ditch latches causing higher loads at ends of bearing. To relieve this condition, tap ends of ditch latches with mallet after lubrication.

(5) Remove wire locks (Ref. Fig. 501, View B) from door pressure stop bolts and back off stop bolts until flush with threaded insert. Retain wire locks.

(6) Disengage and tie back interlock pawl from torque tube collar to permit torque tube rotation during rigging and adjustment procedures.

(7) Verify that ditch latches are properly adjusted (Ref. 52-42-04).

(8) Move handle to OPEN position.

(9) Tag interior and exterior door handles.

B. Door Adjustment

(1) Back off nut at end of ditch latch roller (Ref. Fig. 501, View G).

NOTE: A screwdriver slot in end of roller assembly may be used to hold shaft while loosening nut.

(2) Back off nuts at eyebolts (Ref. Fig. 501, View H) to relieve loads on springs.

(3) With door supported in open position (horizontal), install door pivot arms in pivot hinge fittings above door opening (Ref. Fig. 501, View H), using pivot shafts, bushings, nuts, and washers.

(4) Lower door to closed position.

(5) Verify that ramp followers are seated evenly on ramps and that door is not bearing hard on one lower side wedge (Ref. Fig. 501). If above conditions are not met, or if ditch latches do not clear door rollers when door is opened, make ramp adjustment prior to continuing (Ref. Para. 4C).

(6) Using wedges and/or shims for lateral restraint, position door so that dimensions A and B (Ref. Fig. 501, View J) are equal within ±0.020 inch.

NOTE: If requirements of Step (6) cannot be satisfied, open door and perform Step (7), otherwise proceed to Step (9).

(7) Remove shims from under side wedges (Ref. Fig. 501, View J) on door surround structure. Replace wedges, close door, and perform Step (6).

(8) Measure gap at each side wedge. Determine and record shims required to attain correct gap (Ref. Fig. 501, View J).

(9) Adjust nuts at each eyebolt to attain correct length of each spring (Ref. Fig. 501, View H).

(10) Determine and record number of washers required under each eyebolt head to attain correct gap (Ref. Fig. 501, View H).

(11) Remove pivot shafts and eyebolts.

(12) Install or remove washers at each eyebolt as recorded in Step (10).

(13) Reinstall pivot shafts and eyebolts.

(14) Adjust nuts at each eyebolt to attain correct length of each spring.

(15) Remove lateral restraint.

(16) Open and close door several times and verify that door edge moves in fuselage station plane of doorway.

(17) If door edge does not move in station plane, remove or install washer under eyebolt head to correct door movement. Retain dimensions of Steps (10) and (14).

(18) Install or remove shims at each side wedge as determined and recorded in Step (8).

(19) Close door.

NOTE: Door may bear against side wedges on one side of door with 0.10-inch gap resulting at wedges on other side of door.

(20) If installed, slacken cables to galley door retractor and install 0.125-inch diameter rig pins to lockout retractors.

(21) Adjust pressure stop bolt at each corner of door to attain best compromise of door flushness. Door mismatch tolerances are +0.12 to -0.18 inch.

(22) Tighten remaining stop bolts using feeler gage to attain 0.000 to 0.015 inch gap between each stop bolt and stop block. Check that stop bolts interface pressure stop wear plates within contact area limits. If not, correct before continuing (Ref. Fig. 501, View F). Use wire locks retained in Step (5) to lock bolts in place (20 places).

NOTE: If wire lock cannot be inserted, back off bolt to next slot.

(23) Recheck stops for clearance of 0.000 to 0.015 inch (20 places).

(24) If installed, remove rig pins from galley door retractor to tighten cables.

(25) Install door seal (Ref. 52-41-03).

(26) With door in closed position, place interior handle in CLOSE position.

(27) Rotate eccentric bushing at each ditch latch roller shaft to adjust roller-to-ditch latch inner face as follows:

(a) On ditch latches P/N 1506407, provide for light roller contact, to maximum gap of 0.020 inch (8 places).

(b) On ditch latches P/N 1605248, provide for light roller contact, to maximum gap of 0.125 inch (8 places).

(c) Install ditch latch roller grease seal plugs at ends of rollers.

NOTE: If door roller contacts ditch latches, there must be a clearance between pressure stop bolts and stop pad at positions directly above and below the affected ditch latch.

(28) Open ditch latches and raise door as required to tighten nuts to lock eccentric bushings to serrated support (8 places).

(29) Lower door, close latches and use check fixture P/N 1506404-901CF to check roller-to-latch relationship (Ref. 52-42-04). If tool cannot be inserted in rig pin hole, check ditch latch adjustment (Ref. 52-42-04, Adjustment and Test) before continuing.

(30) Install door liner.

(31) Install emergency egress table on door (Ref. 25-61-18).

(32) Adjust bolt on stop bracket (Ref. Fig. 501, View H) to prevent pivot arms from contacting aircraft structure when door is in open position.

(33) Adjust bolt at uplock (Ref. Fig. 501, View K) so that bearing on door uplock striker fitting displaces uplock arm.

(34) Remove cable guards and idler pulleys.

(35) Pull retractor cables toward door enough to fit over idler pulleys.

(36) Install idler pulleys and cable guards.

(37) Operate door several times to verify smoothness of operation, and contour gaps and mismatch.

(38) Remove door interior and exterior control handle tags.

C. Ramp Adjustment

(1) Open galley door for access to ramp fittings.

(2) Remove ramp fitting attachment bolts, remove ramp and remove old sealant from interfacing surfaces.

NOTE: NAS 5203U15 bolts can be replaced with NAS 6403U15 bolts to facilitate ramp adjustment.

(3) If ramps are not adjustable (slotted), replace with ramps P/N 1539841-103 and -104, or rework as follows:

(a) Remove ramp fittings.

(b) Modify ramp fittings by slotting existing mount holes and spotfacing as required (Ref. Fig. 502).

(c) Touch up bare metal with chemical film treatment and finish with general purpose epoxy primer.

(4) Install ramps with a light application of sealant on mounting surface, and with bolts loose enough to allow ramps to slide easily.

(5) Loosen ditch latch roller eccentric bushings on door (8 places).

(6) Lower door and move ditch latches to LOCK (closed) position.

(7) Adjust forward and aft eccentric bushings directly below ramps to full outboard position and engage serrations (position roller in ditch latches for maximum clearance).

(8) Center door between side wedges and shim loosely to maintain centered position during ramp adjustment.

(9) Using galley door ramp adjustment tool 1506404-901 AT-2 (Ref. Fig. 503) at ditch latches directly below ramps, raise/lower door until door roller just contacts face of tool inserted between door roller and ditch latch (Ref. Fig. 501, View E).

NOTE: Tang on tool must be installed in ditch latch rig hole and check made with 10- to 20-pound load on ditch latch in opening direction.

When adjusting the door as described above, use wedges or equivalent at lower sill and alternately shim door and check with tool until proper door location can be maintained.

(10) Raise forward and aft ramps until ramp follower contacts ramp, then torque inboard ramp attachment bolts.

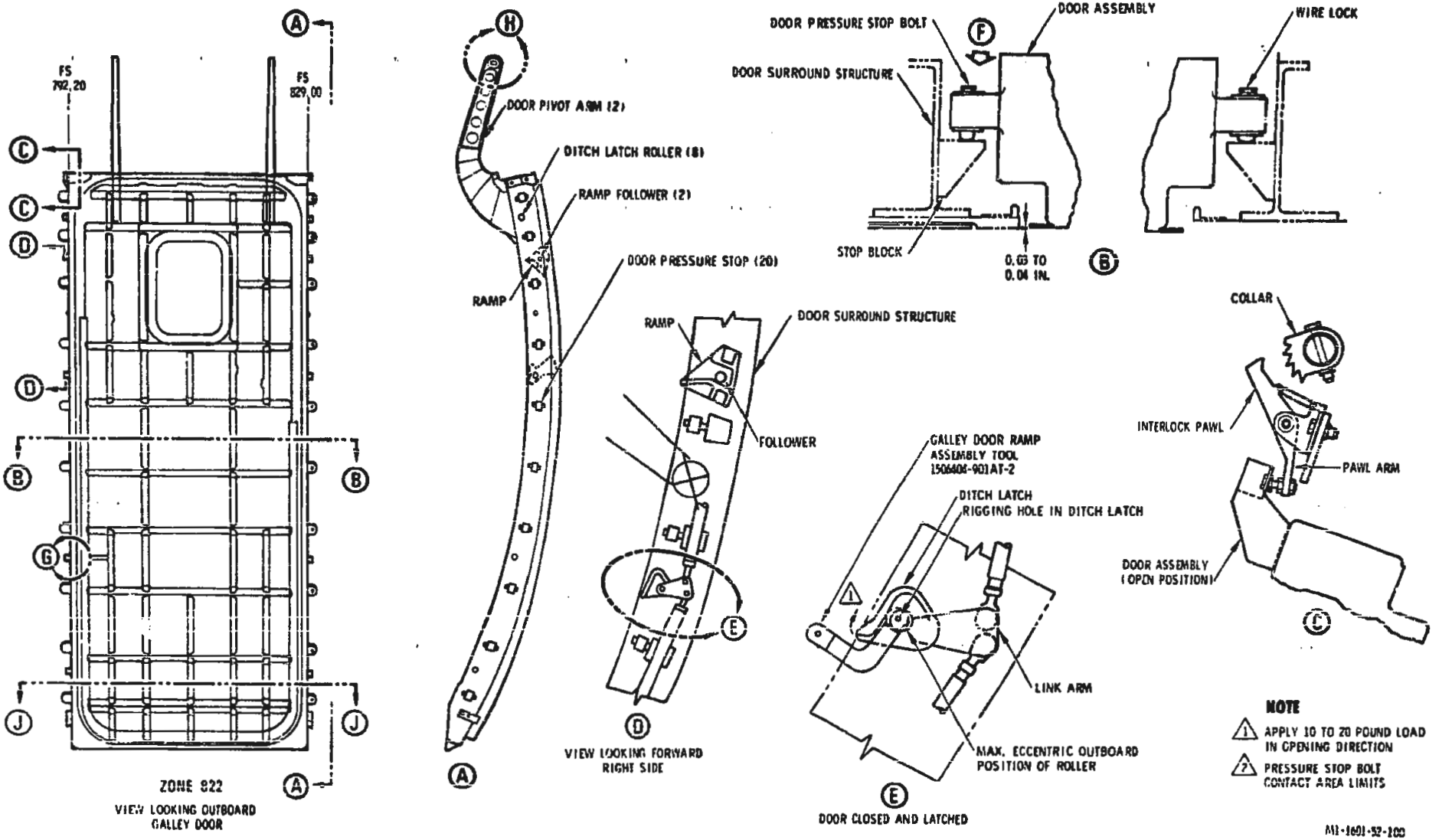
(11) Remove shims between side wedges and open ditch latches.

(12) Raise and lower door and check that forward and aft ramp followers roll approximately even on ramps.

(13) If ramp followers do not roll evenly or one of lower side wedges is riding hard, loosen ramp not having full follower contact during closing cycle and rotate to give improved follower contact. Retorque inboard bolts.

(14) Open door and torque remaining ramp attachment bolts.

D. Pressure Stop Bolt Adjustment/Test

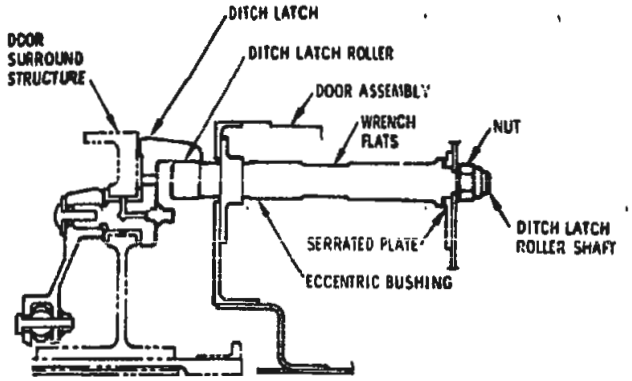


R
R

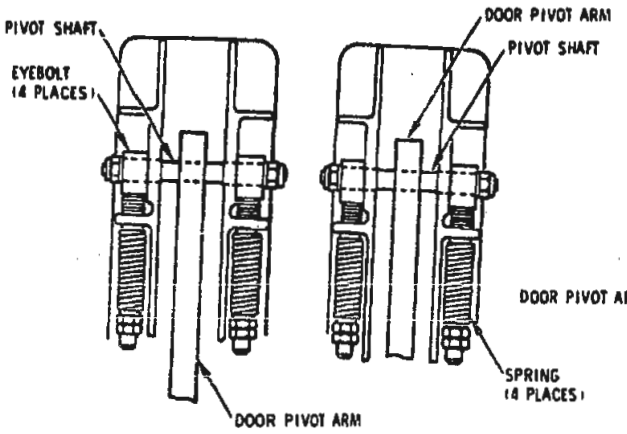
Galley Door Rigging Adjustments
Figure 501 (Sheet 1)

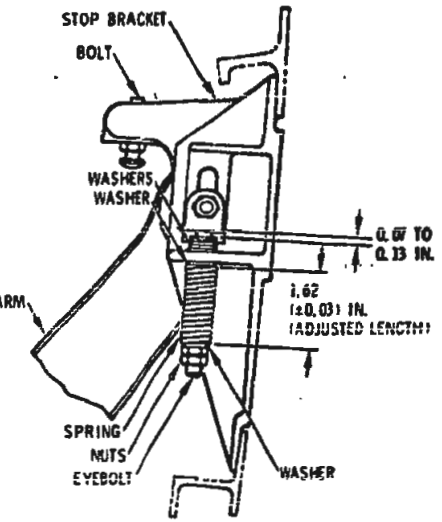
EFFECTIVITY: ALL

0168

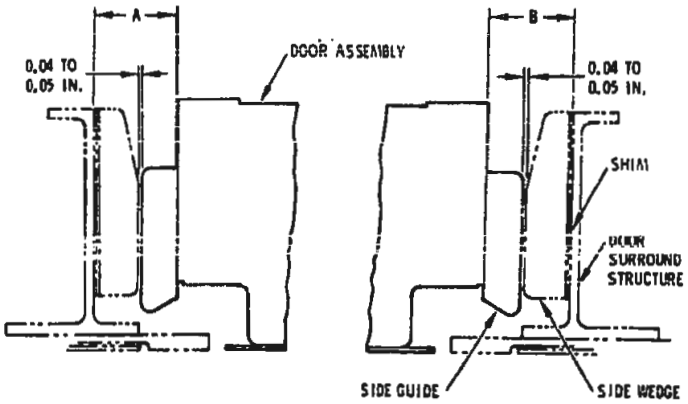


(G)

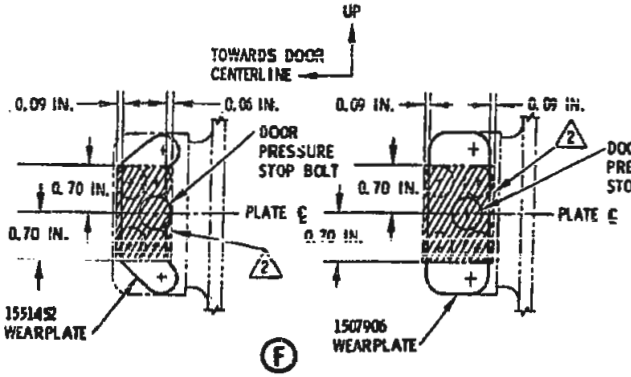




(H)

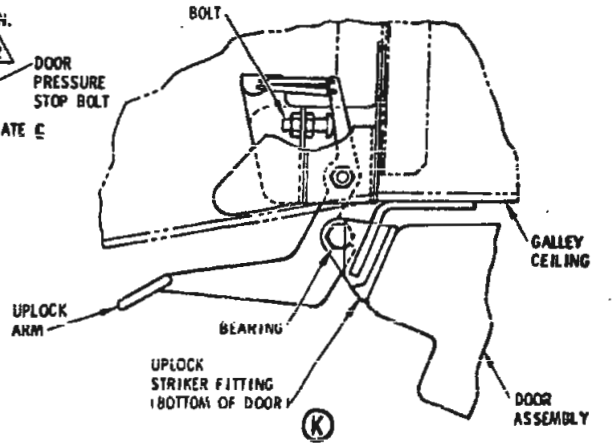


(J)



(F)

VIEW LOOKING OUTBOARD AT WEARPLATES (TYP)



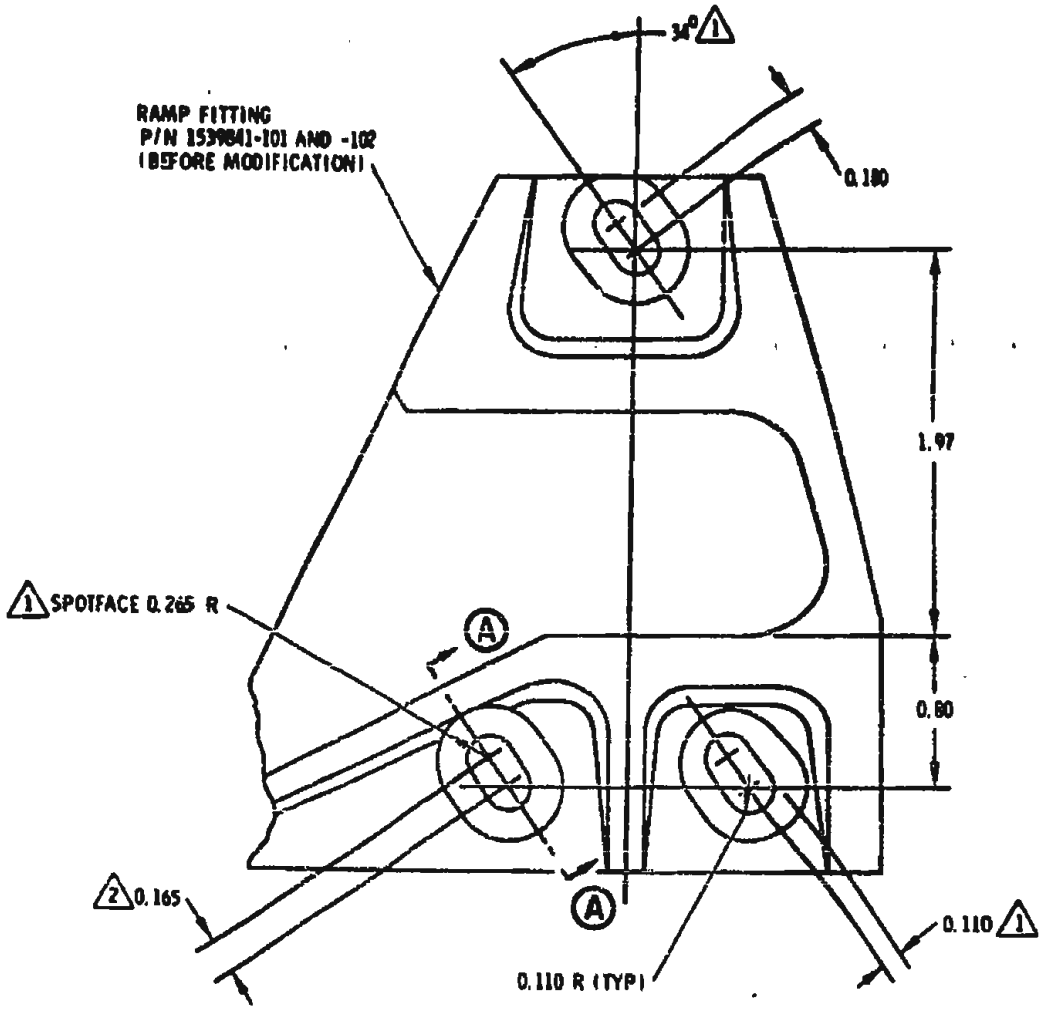
(K)

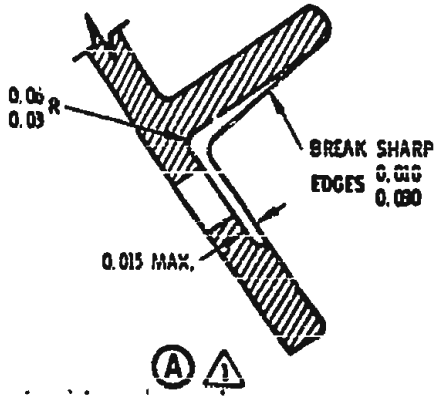
M1-1601-52-101

R Galley Door Rigging Adjustments
R Figure 501 (Sheet 2)

EFFECTIVITY: ALL

016B





NOTE

1 TYPICAL 3 PLACES

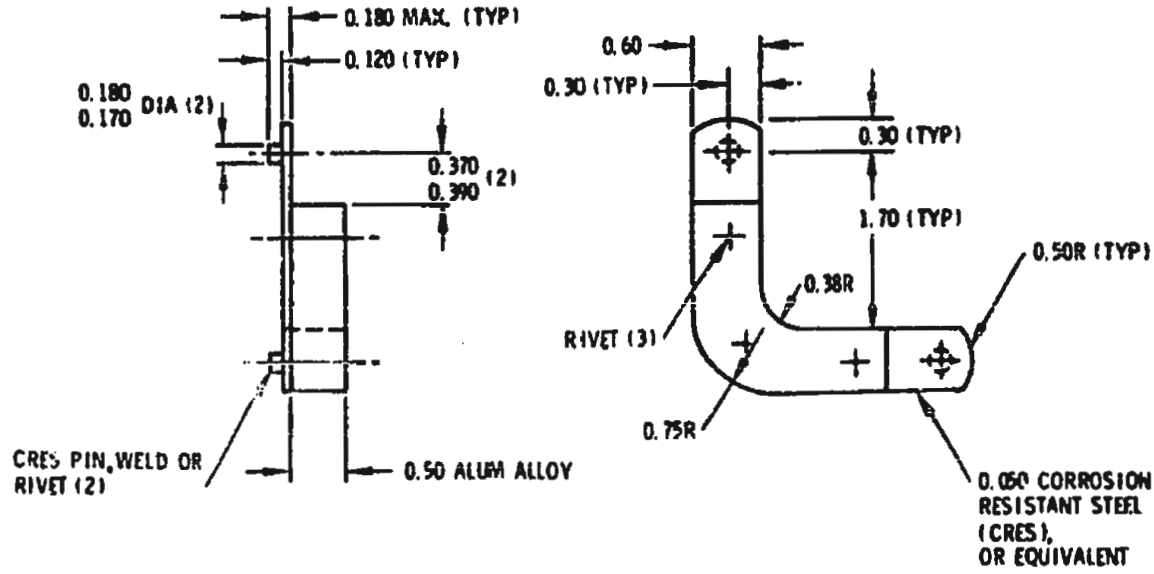
2 TYPICAL 2 PLACES

M1-1600-52-306

R Galley Door Ramp Fitting Modification
R Figure 502

R EFFECTIVITY: ALL

0168



M1-1600-52-307

R Galley Door Ramp Assembly Tool P/N 1506404-901 AT-2
R Figure 503

R EFFECTIVITY: ALL
R
016B

This procedure outlines the adjustment of a single pressure stop bolt. The procedure may be used when there is a random pressure stop wear pad with no apparent contact mark from the pressure stop bolt.

(1) Open door.

(2) Tape shim to wear pad of pressure stop to be adjusted, using pressure sensitive (masking) tape.

(3) Tape shim to wear pad above and below stop to be adjusted.

NOTE: Tape must cover shim in area where stop bolt contacts shim.

(4) Remove wire lock from stop bolt to be adjusted. Retain wire lock.

(5) Close door and latch handle.

R CAUTION: HANDLE MAY NOT FULLY LATCH. DO NOT FORCE HANDLE.

(6) Adjust stop bolt outboard until it contacts shim.

(7) Install wire lock retained in Step (4) to lock bolt in place.

NOTE: If wire lock cannot be inserted, back off bolt to next slot.

(8) Open door.

(9) Check tape covering three shims. Mark from stop bolt should be apparent on all stop pads. If mark does not appear at all three pads, rig door in accordance with Paragraphs A and B of this Section.

(10) With door open remove tape and shims from pressure stop pads.

(11) Close door.

E. Latch Closed Switch Adjustment/Test

(1) Follow procedure for adjustment and test (Ref. 52-41-10).

F. Galley Door Handle Check:

(1) Ensure galley door is closed but not latched.

R (2) Perform closing force check by placing push-Pull force
R gage approximately 0.50 inch from top of T-Handle in
R perpendicular direction to T-Handle. Using smooth
R motion, apply force through gage to close T-Handle and
R measure. Force to close galley door handle shall not
R exceed 50 pounds.

R (3) Perform opening force check by placing strap around
R T-Handle. Attach Push-Pull force gage and pull in
R perpendicular direction to T-Handle. Force to open
R galley door handle shall not exceed 50 pounds.

R (4) Force required to move inner and outer galley door
R handles to initiate galley door opening or closing
R shall not exceed 50 pounds.

C

GALLEY DOOR - INSPECTION AND CHECK

C 1. Door Operation Check

C Equipment required:

C Tension Spring Scale, 0 to 50 lbs.

C Stop watch or other means of measuring time in seconds.

C With mechanic stationed in the galley, check the door opening
C force and the door closing rate as follows (the door is to have
C its lining installed on the door when these checks are
C performed):

C A. Door Opening Force Check

C With the galley service door unlatched and at any position
C close to the fully closed position.

C (1) Attach spring scale to the hold open latch clevis on
C the door at the bottom edge and with the door
C approximately in the closed position, pull on the
C spring scale with a force sufficient only to move the
C door very slowly in the opening direction.

C Note the force required.

C Detach the spring scale.

CR (2) If the force required to move the door exceeds 45 lbs.,
C check for any interference between the door and
C adjacent panels or structure. If no interference is
C found, replace both Retractor Assemblies, P/N 219-3212,
C per Maintenance Manual 52-42-01 400 series pages. (The
C Retractor Assemblies are not adjustable on the
C aircraft).

C B. Door Closing Rate Check

C (1) With the galley service door fully open and secured by
C the hold-open latch, using stop watch or other means,
C release the hold-open latch and check that the time
C taken for the door to free fall to the closed position
C is not less than 5 seconds.

C NOTE: With new or re-conditioned retractor assemblies
C installed, the door may remain open and not fall
C to the closed position.

CR C C C (2) If the time noted is less than 5 seconds, replace both Retractor Assemblies, P/N 219-3212, per Maintenance Manual 52-42-01, 400 series pages. (The Retractor Assemblies are not adjustable on the aircraft).

R GALLEY DOOR SEAL - REMOVAL AND INSTALLATION

R 1. Removal/Installation

A. Removal

(1) Open door to gain access to seal.

R (2) Remove band seal installation from door.

R NOTE: Getting the first part of the seal started is
R usually the most difficult. Once the seal is
R started, however, seal removal is easy. Do not
R use any metal tools to start seal removal as the
R seal retainer may be damaged.

R (3) Disengage seal from seal retainer and remove from door.

B. Installation

(1) Check that door seal, band seal retainer, and seal retainer are clean and free of grease.

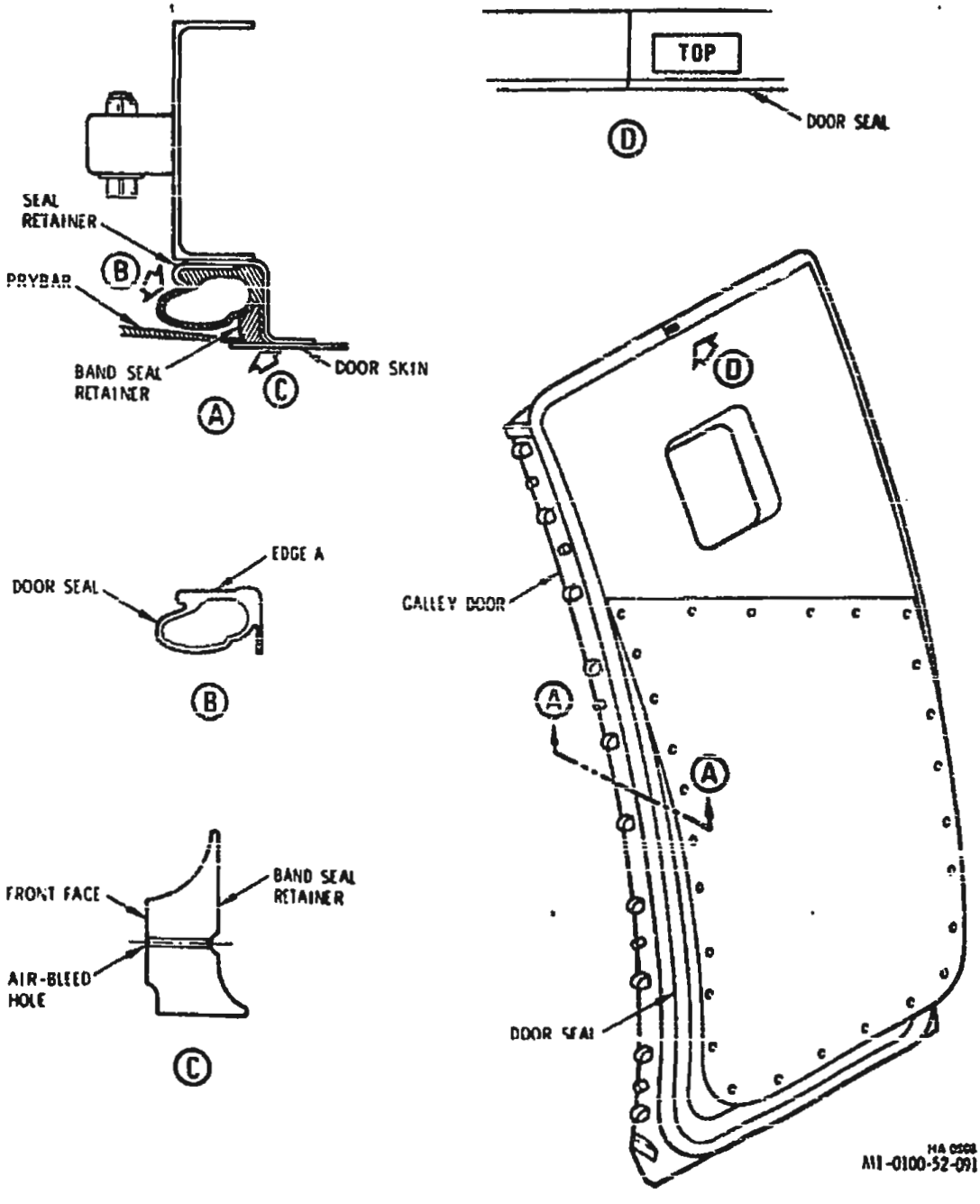
(2) Place door seal on door with word TOP at top of door facing outboard.

(3) Insert edge A of seal into seal retainer.

(4) Insert remainder of seal into seal retainer without stretching or twisting seal.

(5) Install band seal retainer with words LOCATE SPLICE ON BOTTOM OF DOOR at bottom of door. Do not twist band seal retainer.

NOTE: Band seal must have slight preload stretch equally around periphery.



R Door Seal - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL
R
0508

R GALLEY DOOR TRIM PANEL - REMOVAL AND INSTALLATION

R 1. General

R This procedure outlines the steps necessary to remove and
R install the interior trim panels on the galley door.

R 2. Removal/Installation (Ref. Fig. 401)

R A. Removal

R (1) Partially open door to gain access to lower trim panel.

R (2) Remove lower trim panel retaining screws and pry panel
R away from retaining clips. Take care not to damage
R clips during removal.

R (3) Close galley door.

R (4) Remove two screws and washers from left and right latch
R cover panels.

R (5) Remove covers, filler panels, brushes, and plate
R assemblies.

R (6) Remove trim panel retaining screws and pry panel away
R from retaining clips.

R Take care not to damage clips during removal.

R B. Installation

R (1) Close galley door.

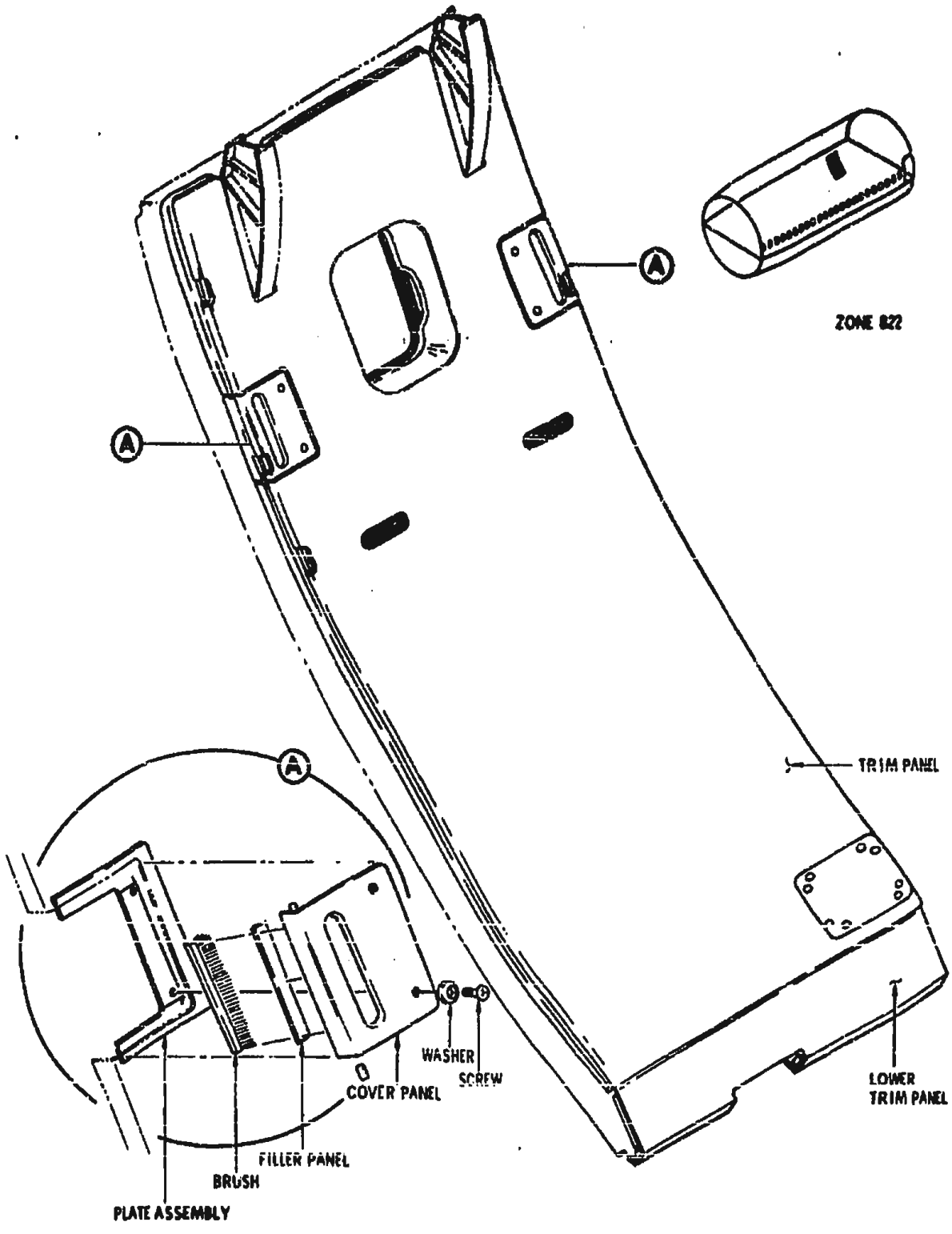
R (2) Align trim pad with clips and press into place.
R Install trim pad retaining screws.

R (3) Position one set of plate assemblies, brushes, filler
R panels, and covers; and attach with two screws and
R washers. Repeat for opposite side.

R (4) Partially open galley door.

R (5) Align lower trim panel with clips and press into place.
R Fasten with retaining screws.

R (6) Close and secure galley door.



M1-0000-52-[illegible]

R Galley Door Trim Panel - Removal/Installation
R Figure 401

GALLEY DOOR LATCH CLOSED SWITCH - ADJUSTMENT AND TEST

1. General

This procedure outlines the adjustment required if galley door latch closed switch is replaced, or if the galley door warning system malfunctions because of improper adjustment of this switch and its related actuation system.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Cotter pin MS24665-151

3. Referenced Procedure

52-71-00 Door Warning System - Adjustment and Test

4. Adjustment/Test

A. Adjustment

(1) Gain access to switch located at lower aft side of galley door (Ref. Fig. 501).

(2) Connect continuity checker to switch pins 1 and 5.

(3) Actuate switch actuation linkage striker and note indication on meter.

(4) Adjust length of link such that when the ditch latches are closed the switch contacts are closed (checker indicates continuity), and when ditch latches are opened the switch contacts open.

(5) With the ditch latches closed, and in conjunction with Step (4), open ditch latches slowly and observe travel of the striker tip from rest until switch contacts
R open. Adjust link rod-end bearing until switch
R operates as described. (If the switch is installed per
R early configuration of Figure 501, the striker tip is
R limited to a travel of 0.030 to 0.060 inch from the
R latch closed position to switch contacts-open position.
R If the switch is installed per later configuration of
R Figure 501, the striker tip is limited to a travel of

R 0.100 to 0.130 inch from the latch closed position to
R switch contacts open position.)

R NOTE: If switch contacts open before striker tip moves
R minimum limited travel as determined by
R applicable installation of switch, (view B of
R Figure 501), shorten link. If switch contacts
R fail to open before striker tip moves maximum
R limited travel, (as determined above), lengthen
R link.

(6) Open and close door, close and open ditch latches to ensure proper switch operation.

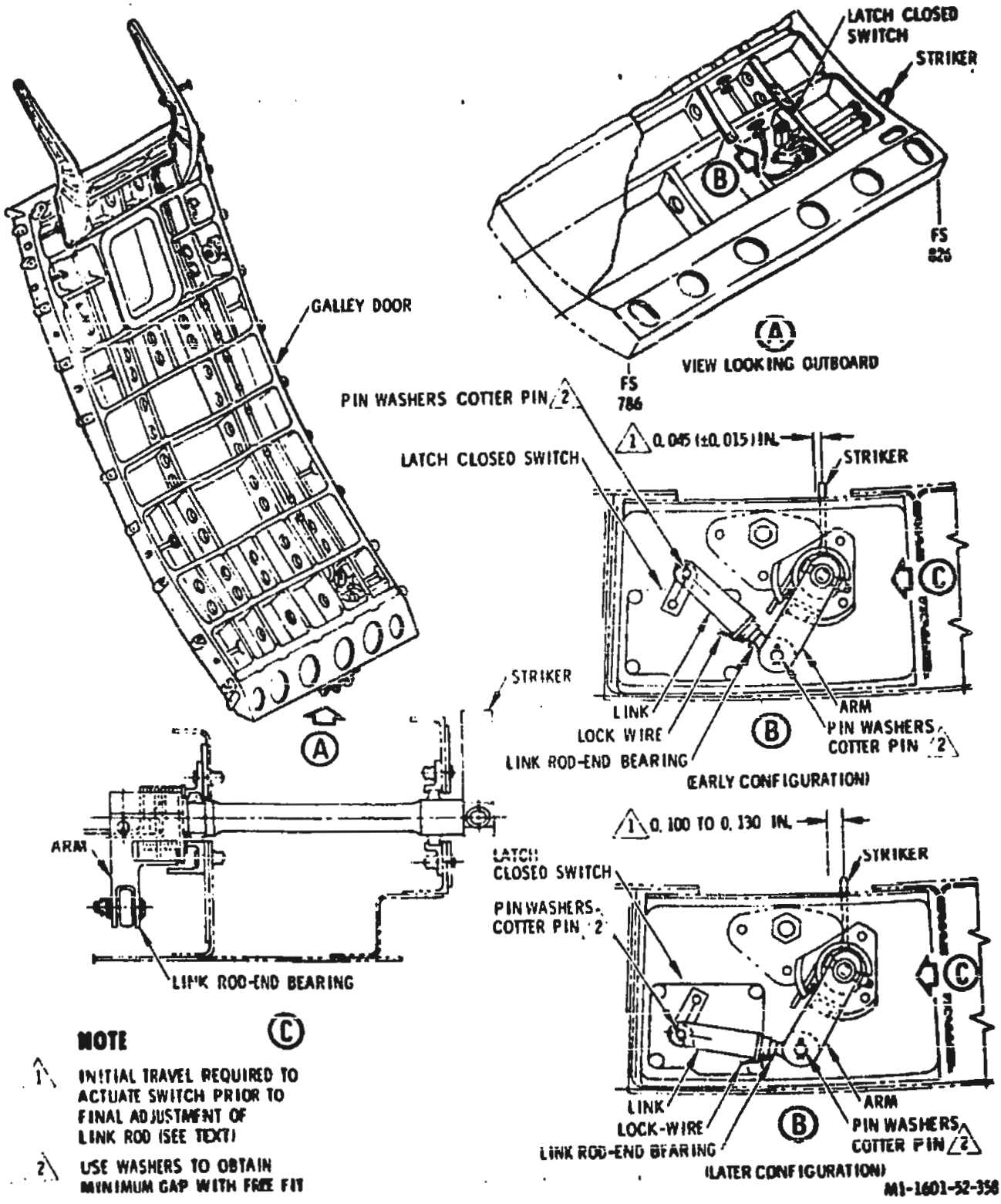
(7) Disconnect link rod-end from arm and unscrew (lengthen) rod-end bearing four complete revolutions. Lock jamnut and install lock-wire.

(8) Reinstall link on arm with pin, washers, and cotter pin. Use washers to obtain minimum gap with free fit. Turn and fold ends of cotter pin for non-snare installation.

(9) Remove continuity checker leads and install switch electrical connector.

(10) Verify operation of galley door warning system (Ref. 52-71-00, Adjustment and Test).

(11) Install switch access cover.



R Galley Door Latch Closed Switch - Adjustment and Test
R Figure 501

EFFECTIVITY: 001-031 WITH SB52-075 AND 032-999

R GALLEY DOOR RETRACTOR SPRING - MAINTENANCE PRACTICES

R 1. General

R The following procedure outlines steps required to deactivate
R inoperative retractor spring assembly (or assemblies) at lower
R galley door.

R 2. Deactivation

R WARNING: IF GALLEY DOOR CANNOT BE CLOSED, DOOR MUST BE
R SUPPORTED DURING THE FOLLOWING PROCEDURE AND LOWERED
R FOLLOWING STEP 2.F BELOW.

R A. Close galley door, if possible.

R B. Locate pinhole in exposed lower forward face of retractor
R fuzee protruding through ceiling panel and insert holding
R pin (Ref. Fig. 201).

R NOTE: If no pinholes are visible and fuzee cannot be
R rotated to bring pinhole into accessible position,
R ceiling panel must be removed to expose entire
R retractor.

R WARNING: RETRACTOR SPRING FUZEE CAN ROTATE WITH A FORCE OF UP
R TO 64 POUNDS. ENSURE HOLDING PIN IS IN CORRECT
R POSITION AGAINST STOPPING BLOCK ON RETRACTOR HOUSING.

R C. Remove access plate over door idler pulley.

R D. On galley door, remove nut from idler pulley shaft and
R disengage or temporarily remove three cable guards.

R E. Remove pin anchoring cable end fitting and detach retractor
R cable end fitting from bracket adjacent to retractor.

R F. Disengage retractor cable from idler pulley.

R G. Stow cable as follows:

R (1) Form cable into loop approximately 10 inches in
R diameter and tie loops together with wire or string.

R (2) Reattach cable end fitting to bracket adjacent to
R retractor.

R H. Replace three cable guards at idler pulley and reattach nut
R on idler pulley shaft removed in Step 2D above.

R I. Replace access plate over door idler pulley.

R WARNING: DOOR WILL LOWER RAPIDLY WITH ONE RETRACTOR DEACTIVATED
R AND WILL FALL FREELY WITH BOTH RETRACTORS DEACTIVATED.
R DOOR WEIGHS APPROXIMATELY 115 POUNDS. MORE THAN ONE
R PERSON MAY BE REQUIRED TO RAISE DOOR. EXERCISE ADDED
R CAUTION WHEN RAISING OR LOWERING DOOR UNDER THESE
R CONDITIONS.

R J. Perform operational check on door. Ensure door opens and
R closes freely and latching mechanism operates normally.

R K. Install placards as follows:

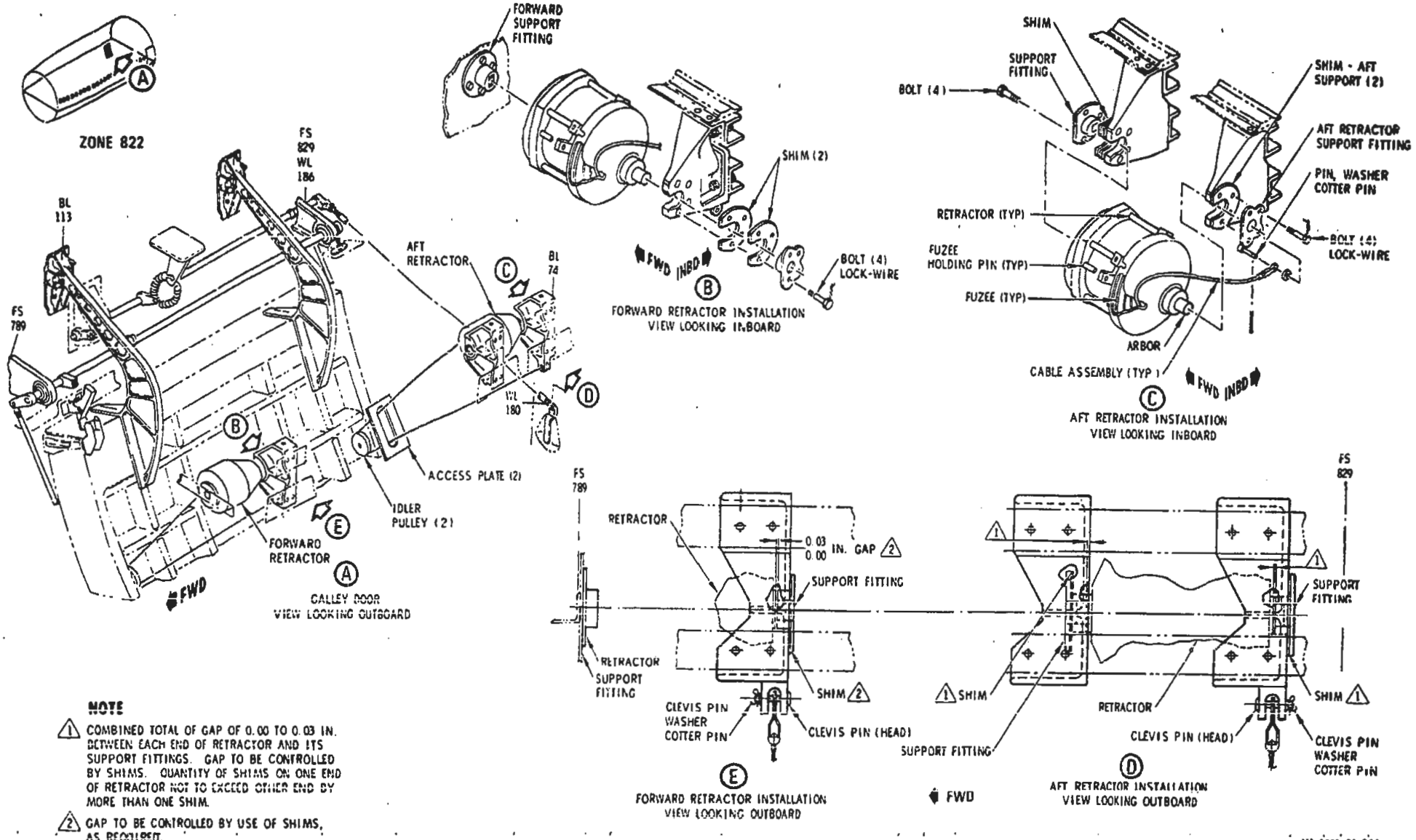
R On galley door control -

R "GALLEY DOOR RETRACTOR INOPERATIVE. DO NOT RELEASE
R DOOR FROM UPLOCK POSITION WITHOUT PHYSICALLY
R RESTRAINING DOOR TO PREVENT FALLING."

R In flight station -

R "LOWER GALLEY DOOR RETRACTOR INOPERATIVE.:

R L. Make appropriate entry in aircraft log book.



NOTE

1. COMBINED TOTAL OF GAP OF 0.00 TO 0.03 IN. BETWEEN EACH END OF RETRACTOR AND ITS SUPPORT FITTINGS. GAP TO BE CONTROLLED BY SHIMS. QUANTITY OF SHIMS ON ONE END OF RETRACTOR NOT TO EXCEED OTHER END BY MORE THAN ONE SHIM.
2. GAP TO BE CONTROLLED BY USE OF SHIMS, AS REQUIRED.

M1-0001-52-308

R Galley Door Retractor
R Figure 201

EFFECTIVITY: ALL

001B

RETRACTOR SPRING - REMOVAL AND INSTALLATION

1. General

Two retractor spring assemblies are installed inboard and above the galley door in zone 132. The two assemblies located at approximately FS790 and FS822 serve to assist galley door opening and to limit door speed when moved to the closed position. Removal and installation procedures for the two retractor spring assemblies are the same.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

Holding Pin, 0.062-inch diameter by 1.5-inch steel rod

R Cotter pins, MS24665-151, and MS24665-298

3. Removal/Installation

A. Removal

(1) Close galley door.

(2) Remove access plate over door idler pulley as required for removal of retractor cable from pulley (Ref. Fig. 401).

(3) Insert holding pin in retractor fuzee holding pin hole.

WARNING: RETRACTOR SPRING FUZEE CAN ROTATE WITH A FORCE OF UP TO 64 POUNDS. DO NOT REMOVE HOLDING PIN FROM FUZEE WITHOUT FIRST RESTRAINING FUZEE WITH A WRENCH OR HOLDING THE CABLE.

(4) On galley door, remove nut from idler puller shaft and disengage or remove three cable guards.

(5) Remove pin and detach retractor cable end fitting from bracket adjacent to retractor spring.

(6) Disengage retractor cable from idler pulley.

(7) Remove ceiling panel over door for access to retractor spring assembly.

(8) Remove retractor spring as follows:

(a) Remove bolts from forward and aft support fittings.

(b) Remove retractor with support fittings and shims. Identify and record location and number of shims to facilitate reinstallation.

B. Installation

(1) Verify galley door closed and ceiling panel over door removed.

R R WARNING: RETRACTOR SPRING FUZEE CAN ROTATE WITH A FORCE OF UP TO 64 POUNDS. DO NOT REMOVE HOLDING PIN FROM FUZEE AT THIS TIME.

(2) Install retractor spring assembly as follows:

(a) Arrange shims with forward and aft support fittings as recorded [Ref. Step 3A(8)(b)], and install with retractor.

(b) Check for 0.00 to 0.03-inch gap between end of retractor arbor and support fitting. Add or remove shims as required. On aft retractor, number of shims on one side of retractor should not exceed number of shims on other side by more than one.

(c) Tighten bolts and lock-wire.

(3) Install ceiling panel over door.

(4) Verify that idler pulley on door is ready for engagement of cable assembly as follows:

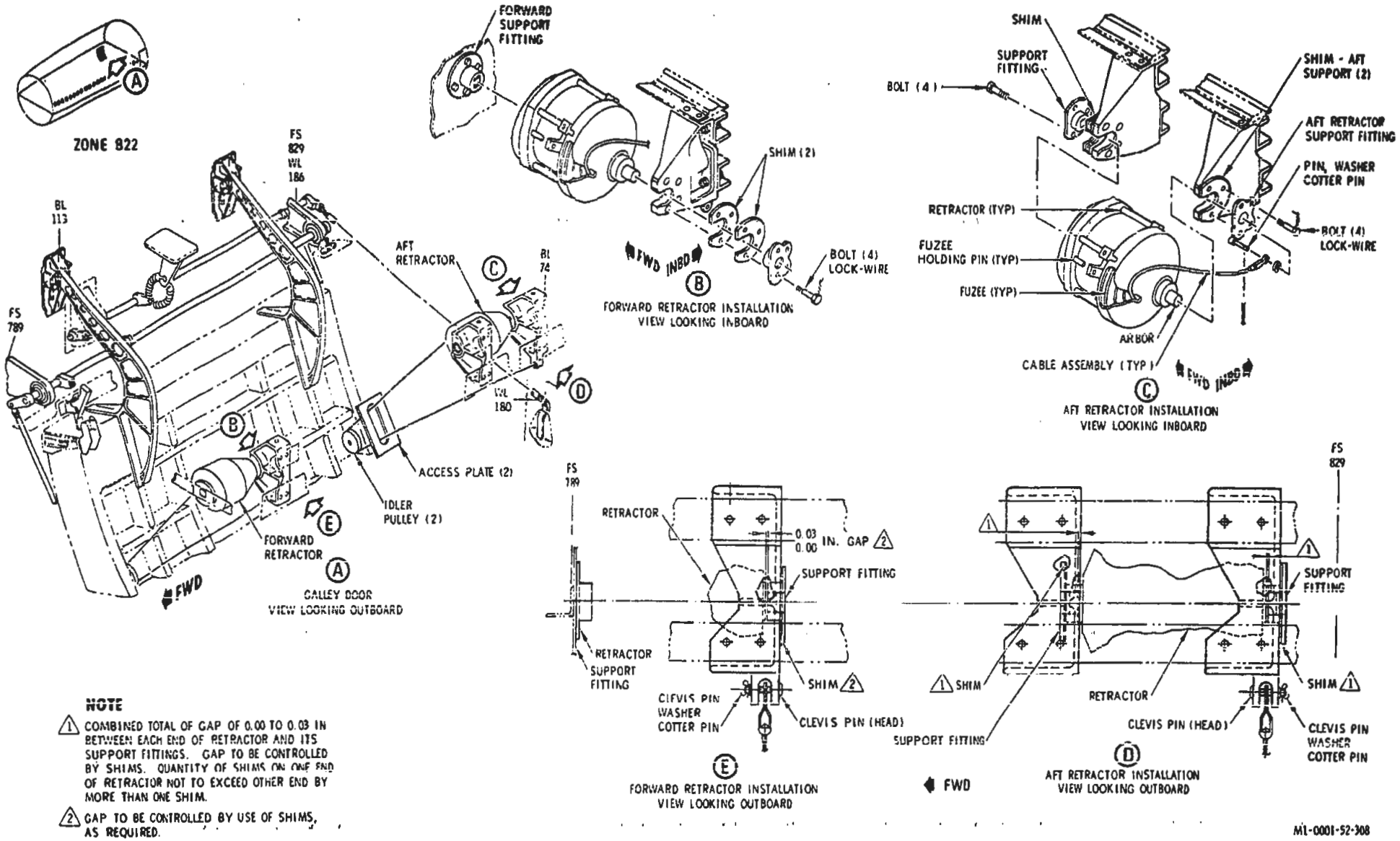
(a) Access plate removed.

(b) Three cable guards clear of idler pulley.

(5) While passing cable loop through idler pulley access plate, engage cable around idler pulley and attach cable end fitting to bracket adjacent to retractor using clevis pin, washer and cotter pin. (At the aft retractor, clevis pin head should face forward. At the forward retractor, clevis pin head should face aft.)If cable is too short, perform the following:

(a) Restrain cable assembly by pulling out on cable from fuzee.

(b) While restraining cable, remove holding pin.



NOTE

1. COMBINED TOTAL OF GAP OF 0.00 TO 0.03 IN BETWEEN EACH END OF RETRACTOR AND ITS SUPPORT FITTINGS. GAP TO BE CONTROLLED BY SHIMS. QUANTITY OF SHIMS ON ONE END OF RETRACTOR NOT TO EXCEED OTHER END BY MORE THAN ONE SHIM.
2. GAP TO BE CONTROLLED BY USE OF SHIMS, AS REQUIRED.

ML-0001-52-308

R Retractor Spring - Removal and Installation
R Figure 401

EFFECTIVITY: ALL

001B

(c) Pull out on cable until cable fitting can be attached to bracket.

R R (6) Engage three guards over idler pulley; tighten nut and install cotter pin.

R (7) Install idler pulley access plate with screws.

R (8) With forward and aft retractor spring assemblies properly installed, verify that door moves freely to door open and closed positions.

GALLEY DOOR DITCH LATCH - REMOVAL AND INSTALLATION

1. General

This procedure provides instructions for removing and installing ditch latches, link arms, and link rods.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

3. Referenced Procedures

12-22-42	Galley Door (G-1) Ditch Latch Lubrication
52-42-04	Door Ditch Latch - Adjustment and Test
52-71-00	Door Warning System - Adjustment and Test

4. Removal/Installation

A. Preparation for Access to Ditch Latch Components

(1) Open galley door and tag interior and exterior door handles.

(2) Remove galley door side trim panels and ceiling trim panels above door as required to gain access to ditch latch mechanism.

(3) Disengage and tie back interlock pawl from torque tube collar (Ref. Fig. 401).

NOTE: Engagement of interlock pawl with collar prevents movement of ditch latches to latched position when door is open.

B. Link Rod Removal

(1) Gain access to ditch latch components (Ref. Para. 4A).

(2) Remove bolt, washer, nut from each link rod end bearing.

(3) Remove link rod.

R NOTE: Link rods No. 2 and 3 must be separated at
R splice sleeve and removed in two pieces.

R (4) If a link rod other than the one being removed is to be
R installed, measure and record length of link rod. On
R link rods No. 2 and 3, reassemble rod before measuring.

R C. Link Rod Installation

R (1) If a link rod other than the one removed is to be
R installed, verify length of link rod with length of rod
R removed.

R (a) Adjust length of link rod if required. Align
R rod-end bearings, tighten jamnuts and lock-wire
R nut to rod-end bearing lock washer.

R (b) On link rods No. 2 and 3 only, adjust link rod
R length with rod assembled then lock-wire rods ends
R [Ref. Step (a)]. Disassemble rod at splice sleeve
R for installation.

R (2) Install link rod between ditch latch link arms using
R bolts, washers, and self-locking nuts.

R (a) Install link rods No. 2 and 3 in two pieces;
R reassemble using two bolts and self-locking nuts
R before installing link rod on link arms.

R (3) Safety link arm retention bolt to link rod attachment
R bolt.

R (4) If maintenance is complete, verify ditch latch
R components, then close access panels and trim (Ref.
R Para. 4H).

R D. Link Arm Removal

R (1) Gain access to link arm(s) (Ref. Para. 4A).

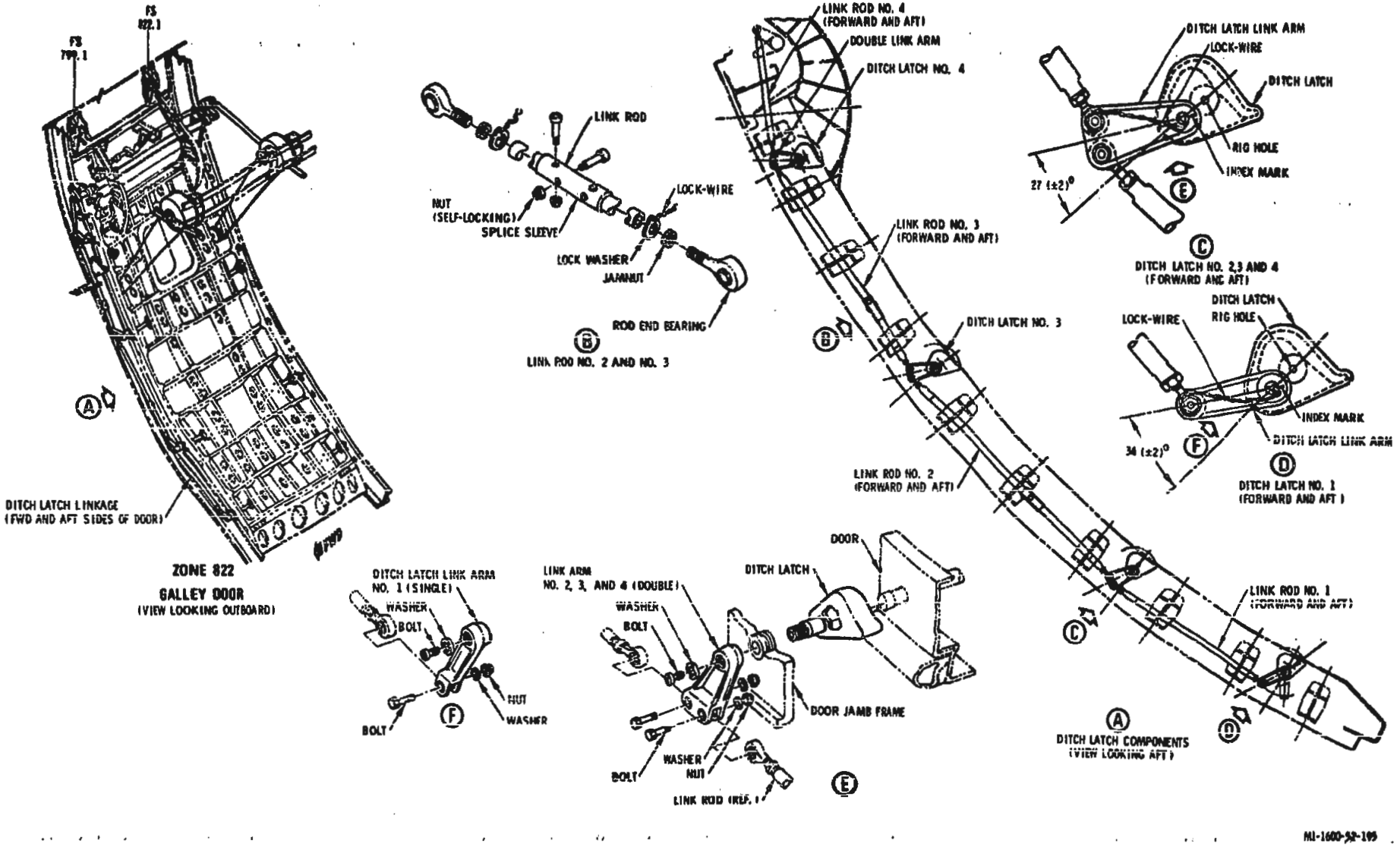
R (2) On link arm to be removed disconnect link rod end(s).

R (3) Remove bolt and washer from link arm.

R (4) If link arm being removed is to be reinstalled, mark
R (index) link arm to ditch latch shaft interface to
R facilitate reinstallation.

R (5) Pull or pry link arm from splined ditch latch shaft.

R E. Link Arm Installation



MI-1600-52-109

R Galley Door Ditch Latch Components - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL

016B

R (1) If new link arm is to be installed or if indexing of
R parts is required, proceed as follows:

R (a) Remove ditch latch.

R (b) On double link arms (Nos. 2, 3, and 4), install
R link arm on ditch latch at 27 (±2)-degree angle
R relative to ditch latch rig hole/shaft centerline.

R (c) On single link arm (No. 1), install link arm on
R ditch latch at 34 (±2)-degree angle relative to
R ditch latch rig hole/shaft centerline.

R (d) Mark (index) link arm to ditch latch shaft
R interface. Separate link arm from ditch latch.

R (e) Reinstall ditch latch.

R (2) Align link arm index with ditch latch shaft spline
R index and install. Tap link arm onto shaft and install
R bolt and washer.

R (3) Tighten link arm attachment bolt and lock-wire after
R link rod installation is complete (Ref. Para. 4C).

R (4) Lubricate ditch latch bearing (Ref. 12-22-42).

R (5) If maintenance is complete, verify ditch latch
R components, then close access panels and trim (Ref.
R Para. 4H).

R F. Ditch Latch Removal

R (1) Gain access to ditch latch components (Ref. Para. 4A).

R (2) Disconnect link rod end bearings from affected ditch
R latch link arm (Ref. Para. 4B).

R (3) Remove link arm from ditch latch (Ref. Para. 4D).

R (4) Remove ditch latch.

R G. Ditch Latch Installation

R (1) Index ditch latch to link arm and install ditch latch
R with link arm (Ref. Para. 4E).

R (2) Install link rods (Ref. Para. 4C).

R (3) Lubricate ditch latch (Ref. 12-22-42).

R (4) Verify ditch latch components, then close access panels and trim (Ref. Para. 4H).

R H. Ditch Latch Component Verification

R (1) Verify that all ditch latches are installed and properly attached to appropriate link arms.

R (2) Verify that all link rods are installed.

R (3) Verify that link arm/ditch latch attachment screws and washers are installed and lock-wired to link arm/link rod attachment bolts.

R (4) Verify that all newly installed ditch latches have been lubricated.

R (5) Verify that ditch latches are properly rigged (Ref. 52-42-04, Adjustment and Test).

R (6) Remove restraint from torque tube collar interlock pawl [Ref. Step 4A(3)].

R (7) Install door side trim and ceiling panels as required.

R (8) Remove galley door control tags.

R (9) Verify operation of door warning system galley door annunciator light (Ref. 52-71-00).

R # GALLEY DOOR DITCH LATCH - ADJUSTMENT AND TEST

R 1. General

R This section provides instructions for rigging the galley door (G-1) ditch latches. The following procedures are included:

R PROCEDURE	PARAGRAPH
R Preparation	4A
R Exterior Handle Adjustment	4B
R Warning Light Sensor Adjustment	4C
R Ditch Latch Rigging	4D
R Full Unlock Stop Adjustment	4E
R Interior Handle Adjustment	4F
R Interlock Pawl Adjustment	4G
R Ditch Latch Marker Check	4H
R Completion Check	4I

R 2. Equipment and Materials

R Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

R Rigging Tool, Galley Door Overcenter Link, LAC P/N T-6820 TFA-1, or equivalent

R Check Fixture, Galley Door Ditch Latch/Roller, LAC P/N 1506404-901 CF, or equivalent

R Rig Pin B994, or equivalent 0.125 inch diameter rod

R 3. Referenced Procedures

R 25-33-00 Galley Trim - Removal and Installation

R 25-61-18 Emergency Egress Table - Removal and Installation

R 52-41-01 Galley Door - Adjustment and Test

R 52-71-00 Door Warning System - Adjustment and Test

R 4. Adjustment/Test

R A. Preparation

R (1) For access to exterior handle overcenter linkage, galley door warning sensor, interlock pawl, torque tube full unlock stop, or to upper components of the ditch latches, close door and remove sidewall trim panels above door (Ref. 25-33-00).

R (2) For access to ditch latches, proceed as follows:

R (a) Remove emergency egress table from door (Ref. 25-61-18).

R (b) Remove galley door sidewall trim panels, and sidewall trim panels above door (Ref. 25-33-00).

R (3) Open galley door and tag interior and exterior handles.

R (4) Disengage and tie back interlock pawl from torque tube collar to permit torque tube rotation during rigging and adjustment procedures (Ref. Fig. 501).

R B. Exterior Handle Adjustment

R (1) Prepare for exterior handle check/adjustment (Ref. Para. 4A).

R (2) Actuate exterior handle to closed position (with galley door open); verify that handle is flush with fuselage skin tripler around handle (+0.06 to -0.12 in.). If adjustment is required, adjust stop bolt on arm until handle is within tolerance. Tighten locknut and lock-wire.

R NOTE: If sufficient adjustment is not available and a nut is located on stop side of arm, remove jamnut. Ensure that there is a jamnut on inboard side of stop bolt and nut is lock-wired.

R (3) With exterior handle closed, use tool T-6820 TFA-1, to verify that center of pivot bolt which connects exterior handle arm assembly to turnbuckle is 0.12 to 0.15 inch overcenter.

NOTE: If tool T-6820 TFA-1 does not fit over ends of fasteners, tool may be bent on flat plane to facilitate installation.

(4) If adjustment is required, adjust length of turnbuckle to obtain pivot bolt overcenter dimension of 0.12 to 0.15 inch. Tighten locknuts and lockwire.

C. Warning Light Sensor Adjustment

CR (1) Prepare for galley door warning sensor adjustment as follows:

(a) Gain access to sensor and ditch latches (Ref. Para. 4A).

(b) Disengage and tie back interlock pawl from torque tube collar to permit ditch latches to be opened and closed with door open.

(c) Tie back galley door latch closed switch striker to simulate door-latched condition, using lock-wire through hole provided in striker.

NOTE: This permits the sensor to be adjusted with the galley door open.

(2) Establish interphone communication between Flight Engineer/Second Officers station and galley area.

(3) With exterior handle and overcenter linkage properly adjusted (Ref. Para. 4B) and in locked position (exterior handle closed), verify that galley door open warning light located on Flight Engineer/Second Officers annunciator panel is out.

(4) Install galley door overcenter link rigging tool.

(5) Insert a 0.024-inch thickness gage between stop bolts on exterior handle box and arm assembly. The GALLEY warning light must not come on.

(6) Remove thickness gage from between stops. Using a flat blade screwdriver inserted between stop bolts [Ref. Step (5)], pry arm slowly in opening direction until GALLEY warning light comes on. Note position of pivot bolt in rigging tool slot. At point warning light comes on, pivot bolt center point must be a minimum of 0.040 inch on latched side of top center line.

(a) If warning light comes on when 0.024-inch thickness gage is inserted between stop bolts, move sensor target closer to sensor.

(b). If warning light comes on when overcenter link pivot bolt is less than 0.040 inch from top center line, move sensor target farther away from sensor.

NOTE: If necessary, sensor target mounting holes may be elongated to provide more adjustment capability.

(7) Verify that sensor target mount screws are tight, and that all jamnuts on overcenter link and stop bolts are lock-wired.

(8) Remove lock-wire from door latch closed switch striker.

(9) Verify operation of door latch closed switch as follows:

(a) Close and latch galley door.

(b) Place steel artificial target between sensor and target.

(c) Verify that GALLEY door warning light on FE/SO annunciator panel turns on when door is unlatched and turns off when door is latched.

(d) If switch requires adjustment refer to 52-41-10, Adjustment and Test.

(e) Remove artificial target from sensor.

D. Ditch Latch/Roller Rigging

The galley door ditch latches must be checked or adjusted progressively from top (No. 4 ditch latch) to bottom (No. 1 ditch latch) because adjustment to an upper latch affects adjustment to all latches below it. If, during a check, a ditch latch is found to require adjustment, discontinue check and adjust that latch and all those below it on same side of door.

(1) Perform check at all ditch latches on each side of galley door (8 places) as follows:

(a) Verify that exterior handle has been adjusted (Ref. Para. 4B).

(b) Verify that galley door warning light sensor has been adjusted (Ref. Para. 4C).

(c) Close galley door and engage latches (exterior handle closed).

(d) Starting at the top ditch latches (No. 4), apply a load of approximately 10 to 20 pounds on each ditch latch as check is made. Apply load in direction of latch unlocking using manual pressure, or by means of a spring scale pulling at the tip end of each ditch latch being checked. Use a loop of 0.032-inch lock-wire to attach spring scale.

(e) Insert ditch latch/roller check fixture between door roller and side of ditch latch (Ref. Fig. 501). Tang on check fixture must engage rig pin hole in ditch latch and roller must clear face of fixture.

(f) If fixture cannot be fit into latch as described, that ditch latch and all below it must be adjusted.

(g) If a loose latch, or latch contact with door surround structure is noted check for latch shaft to bushing wear (Ref. Fig. 502), and correct if out of tolerance.

(2) Rig ditch latches as follows:

(a) Before proceeding verify that exterior handle and galley door warning light sensors have been adjusted.

(b) Open galley door and close exterior handle.

(c) Gain access as required to ditch latches at the forward and/or aft side of galley door (Ref. Para. 4A).

(d) At ditch latch No. 4 (or the uppermost ditch latch requiring adjustment), and with a load of approximately 10 to 20 pounds (in unlocking direction) on each ditch latch being checked for alignment [Ref. 4D(1)(d)], insert rig pin (0.125 in. diameter) through ditch latch rig hole and check for alignment with rig hole on fuselage frame adjacent to door. Determine amount and direction of correction required to align rig pin holes.

NOTE: On some aircraft the rig pin holes are not large enough to insert a rig pin, therefore alignment must be achieved by visually aligning latch rig hole with hole or indentation on the adjacent fuselage frame.

The forward upper link rod (No. 4) rod-end fitting is not directly accessible for adjustment. Some adjustment to this link rod can be made at the lower rod-end fitting, but if more adjustment is required, mark the bellcrank at the upper end for ease of reinstallation, remove bellcrank through-bolt, remove bellcrank from torque shaft and lower the link rod with bellcrank until rod-end bearing and bellcrank are accessible for adjustment.

(e) Disconnect link rod above ditch latch being adjusted and vary length by turning rod end bearing in or out of link rod.

NOTE: Each full turn of a rod end bearing will result in a linear movement at the ditch latch rig hole of approximately 0.012 inch. If ditch latch rig hole is low relative to adjacent frame rig hole, lengthen link rod.

(f) When ditch latch adjustment is correct, tighten link rod jamnuts.

NOTE: Because ditch latch link rod adjustments may be affected during subsequent adjustments, lock-wiring of link rod jamnuts can be omitted until all adjustments are completed.

(g) After each link rod adjustment has been completed and link rod attached to ditch latch arm, check that a clearance of 0.05 inch is maintained between link rod jamnuts, locking tab washers, or lock-wire and the adjacent ditch latch arm. Operate ditch latches to unlatched position and check for clearance. If correction is necessary redistribute link rod position by turning out rod end (where clearance is required) and turning in rod end on opposite end of link rod, then reinstall link rod.

(h) Adjust, as required, ditch latches No. 3, No. 2, and No. 1 on forward and aft sides of door.

(1) Make torque tube full unlocked stop adjustment.

E. Torque Tube Full Unlock Stop Adjustment

(1) With galley door open gain access to full unlock stop located at aft end of torque tube assembly and back off stop bolt until face of stop bolt is within 0.30 inch of top of stop fitting.

(2) Unlock latches by pulling exterior handle full down (approximately 65 degrees travel).

(3) Verify that interior handle does not contact stop (if installed) with exterior handle full down. Remove interior handle stop bolt if handle makes contact.

NOTE: Interior handle contact with stop may prevent exterior handle from moving to its full unlocked position.

(4) If interior handle appears to go over center (toggle) and limits the exterior handle from moving to its full unlocked position, disconnect the interior handle link rod at outboard end.

(5) Adjust full unlock stop bolt to contact link arm located at aft end of torque tube. Tighten stop bolt jamnut and lock-wire.

(6) Close galley door, lock and unlock door, and with latches in unlocked position open galley door and verify that door rollers clear ditch latches as door is opened. If rollers do not clear ditch latches continue as follows:

(a) Lengthen link rod above each ditch latch that contacts roller to limit of rig pin tolerance (ditch latch rig pin hole is larger than rig pin); this moves ditch latch toward unlocked position. To maintain position of ditch latch latches below, the link rod immediately below must be shortened by the same amount the link rod above is lengthened.

(b) If door roller/ramp contact still occurs when opening galley door, readjust ramp guides to correct condition (Ref. 52-41-01).

(7) Verify interior handle adjustment (Ref. Para. 4F).

F. Interior Handle Adjustment

(1) Verify that exterior handle is properly adjusted and in closed position (Ref. Para. 4B).

(2) Verify that galley door ditch latches are properly rigged.

(3) Verify that interior handle link rod is properly installed and handle free to move within handle recess (Ref. Fig. 501).

(4) If interior handle is in wrong position, contacts handle stop, or goes over center, adjust handle as follows:

(a) Gain access to interior handle rod assembly and adjust rod length as required to properly position interior handle in the LOCK position.

NOTE: With rod assembly installed at a nominal length of 54.27 inches, interior handle should be properly positioned.

(b) Move interior handle to UNLOCK position. Handle must not contact handle stop, or go overcenter (toggle). Adjust as required to clear stop by a minimum of 1/8 inch, or until exterior handle can be closed to lock door.

NOTE: If interior handle stop is not installed, or is bent or broken, the upper outboard pivot fitting mount bolt can be removed and replaced by an NAS 5703 U28 bolt which will extend aft of the panel and serve as a handle stop.

Make link rod adjustments at outboard end as long as rod-end bearing threads are visible in inspection hole.

(5) After interior handle rod length is adjusted, tighten rod-end bearing jamnuts and lock-wire. Reinstall rod assembly with bushing, bolt, washer, and nut.

G. Interlock Pawl Adjustment

(1) Remove trim panel forward of galley door for access to interlock pawl.

NOTE: Workman must climb into area for access to pawl.

(2) Adjust interlock pawl arm stop bolt to provide a clearance of 0.10 (±0.03) inch between pawl and collar

teeth, when galley door is 0.50 (±0.10) inch from the closed position. Lock-wire stop bolt.

(3) Verify that pawl engages collar teeth, when door is moved toward the open position.

NOTE: The engagement of pawl with collar prevents movement of ditch latches to latched position, when door is open.

CR H. Deleted

I. Completion Check

(1) Verify that all ditch latches are properly installed with link rod jamnuts tight and lock-wired.

(2) Verify that link arm/ditch latch attachment bolts are installed and lock-wired to link arm/link rod attachment bolts.

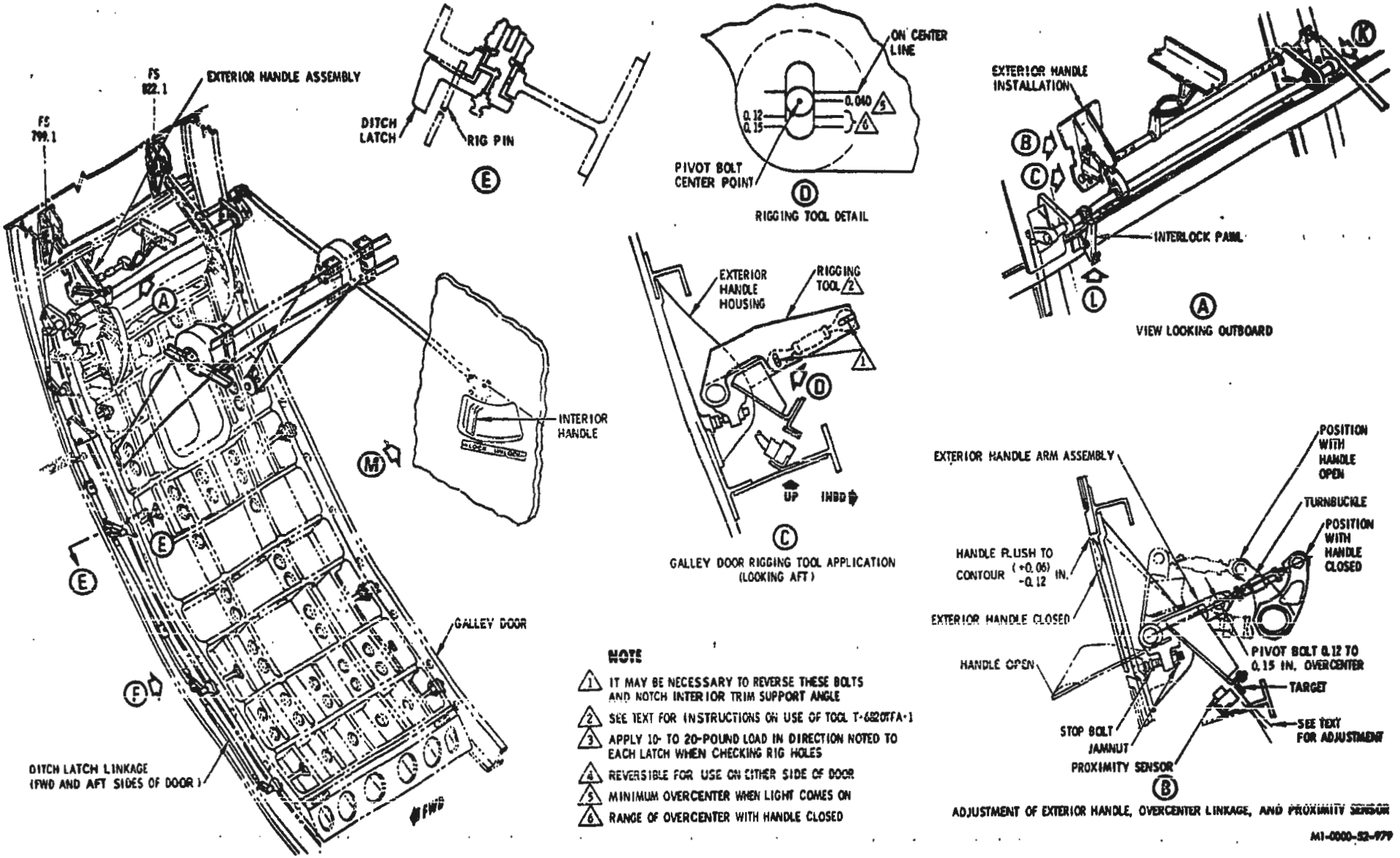
(3) Verify that interlock pawl restraint wire has been removed.

CR (4) Install side wall trim around galley door (Ref.
CR 25-33-00).

CR (5) Install emergency egress table (Ref. 25-61-18).

(6) Remove tags from interior and exterior galley door controls.

(7) Verify operation of door warning system galley door annunciator light (Ref. 52-71-00).



NOTE

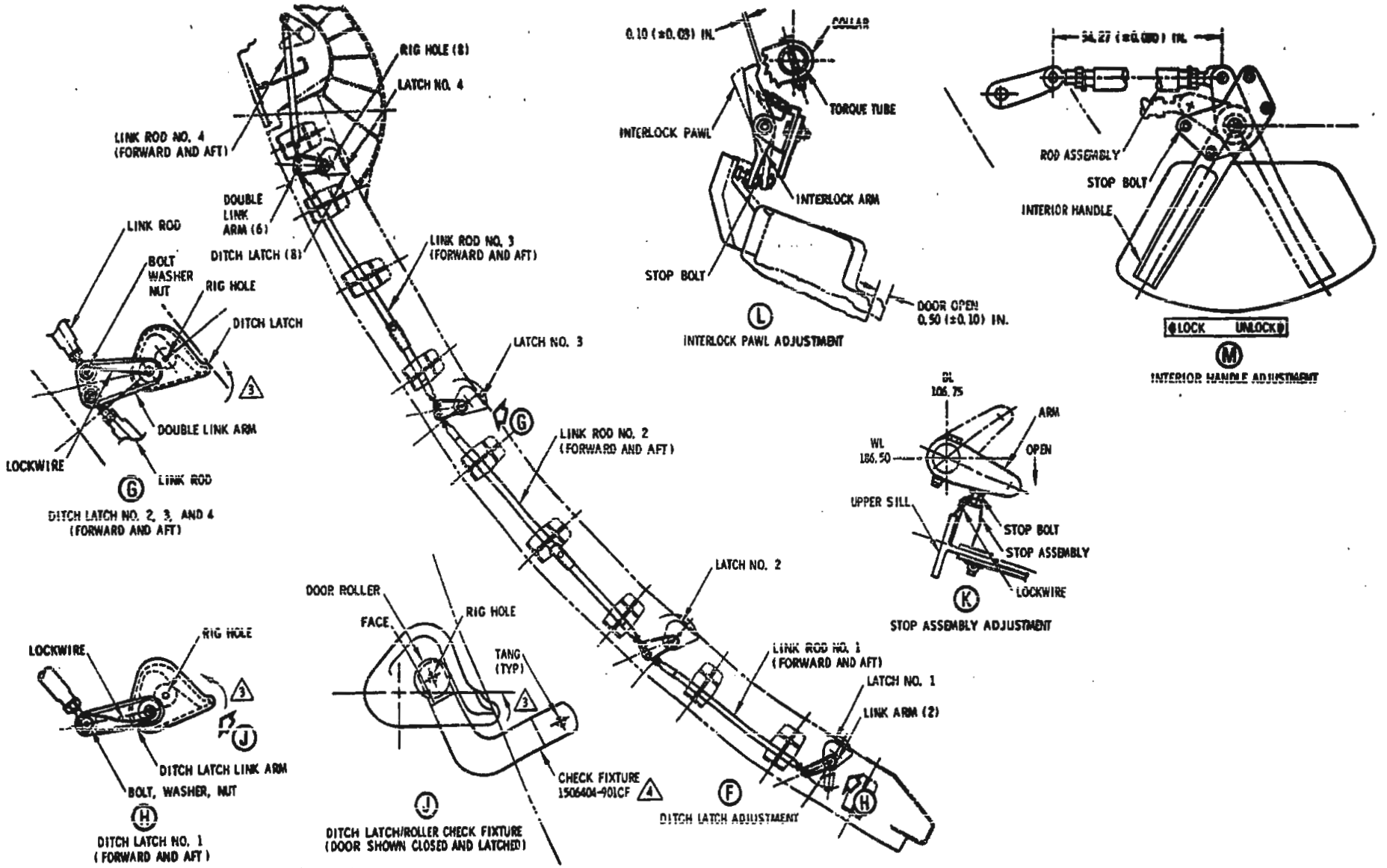
1. IT MAY BE NECESSARY TO REVERSE THESE BOLTS AND NOTCH INTERIOR TRIM SUPPORT ANGLE
2. SEE TEXT FOR INSTRUCTIONS ON USE OF TOOL T-6820TFA-1
3. APPLY 10- TO 20-POUND LOAD IN DIRECTION NOTED TO EACH LATCH WHEN CHECKING RIG HOLES
4. REVERSIBLE FOR USE ON EITHER SIDE OF DOOR
5. MINIMUM OVERCENTER WHEN LIGHT COMES ON
6. RANGE OF OVERCENTER WITH HANDLE CLOSED

CR
CR

Galley Door Ditch Latch - Adjustment and Test
Figure 501 (Sheet 1)

EFFECTIVITY: ALL

001B

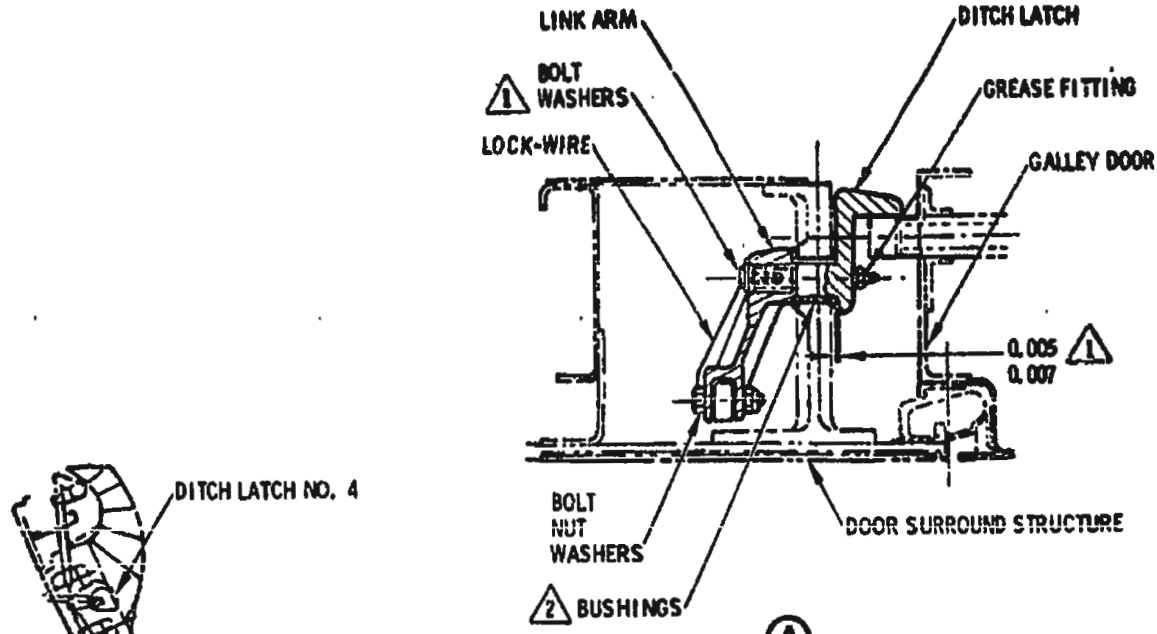


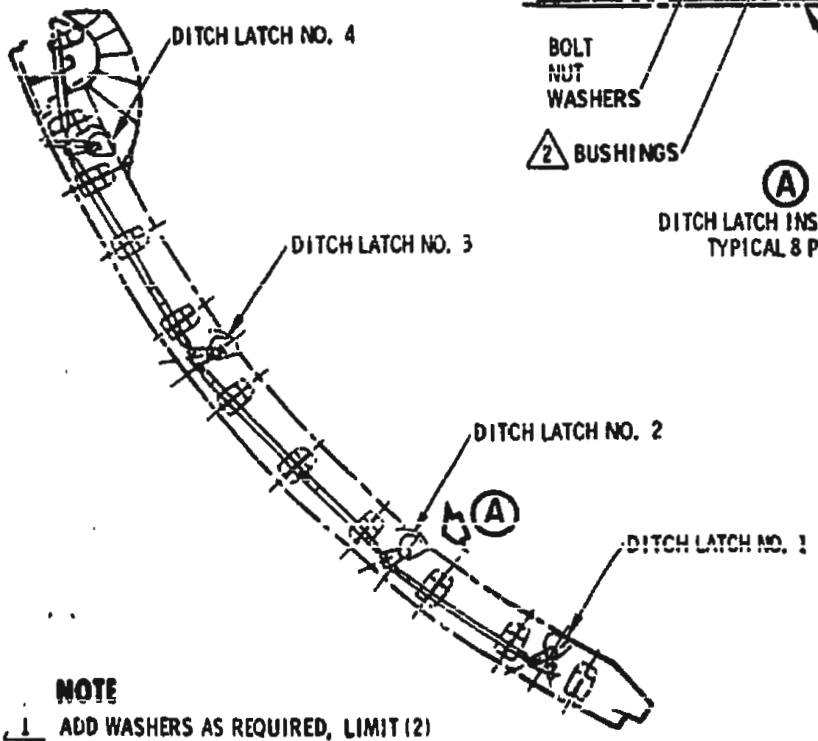
M1-0000-52-880

CR Galley Door Ditch Latch - Adjustment and Test
CR Figure 501 (Sheet 2)

EFFECTIVITY: ALL

001B





NOTE

1 ADD WASHERS AS REQUIRED, LIMIT (2)

2 MAXIMUM RADIAL CLEARANCE BETWEEN LINK ARM SHAFT AND BUSHING INSIDE DIA

- AT OVERHAUL 0.010 INCH
- IN SERVICE 0.015 INCH

M1-0000-52-951

R R Galley Door Ditch Latch/Bushing Clearances
Figure 502

R R 001B EFFECTIVITY: ALL

ELECTRICAL/ELECTRONIC SERVICE DOORS - DESCRIPTION AND OPERATION

1. Forward Electronic Service Center Door

A. Description

The forward electronic service center door, 112AB, (Ref. Fig. 1) is located on the bottom of the fuselage under the flight station at approximately FS 200, zone 112.

The door is a plug-type, sealed unit whose structure consists of a frame, beams, and intercostals made of aluminum sheet metal and extrusions. The door is 30 inches long and 40 inches wide.

A seal is provided on the door to withstand cabin air pressure loads.

The door is actuated from the outside only. A retractable handle is provided to actuate the bayonet-type latching mechanism.

A four-bar, parallel-link-type hinge allows the door to be manually moved up and back inside the fuselage nose to provide entry to the service center. The system is spring loaded to assist in opening the door.

R The latching mechanism is comprised of a handle, eccentric cam follower, and bayonet-type link arms.

A proximity switch interfaces the door to indicate a latch safe condition.

2. Mid Electrical Service Center (S-2) Door

A. Description

The mid electrical service center S-2 door, 137AZ, (Ref. Fig. 2) is located on the lower right side of the fuselage below the wing leading edge at approximately FS 957, zone 137. The door is located in the fuselage structure above the main landing gear fairing. To reach the door, the S-2 fairing door, 192K, must first be opened.

The S-2 door is a plug-type, hinged unit with sides approximately 26 by 30 inches. The door structure is made of aluminum beams and intercostals.

The door can be opened from the outside or inside by a manually operated bayonet-type latch mechanism.

Three pressure stops with adjustable screws are located on each side of the door.

The door has a centrally located latch handle with bellcrank-operated dagger latches. The dagger supports are rubber-shock-mounted to allow for structural deflections.

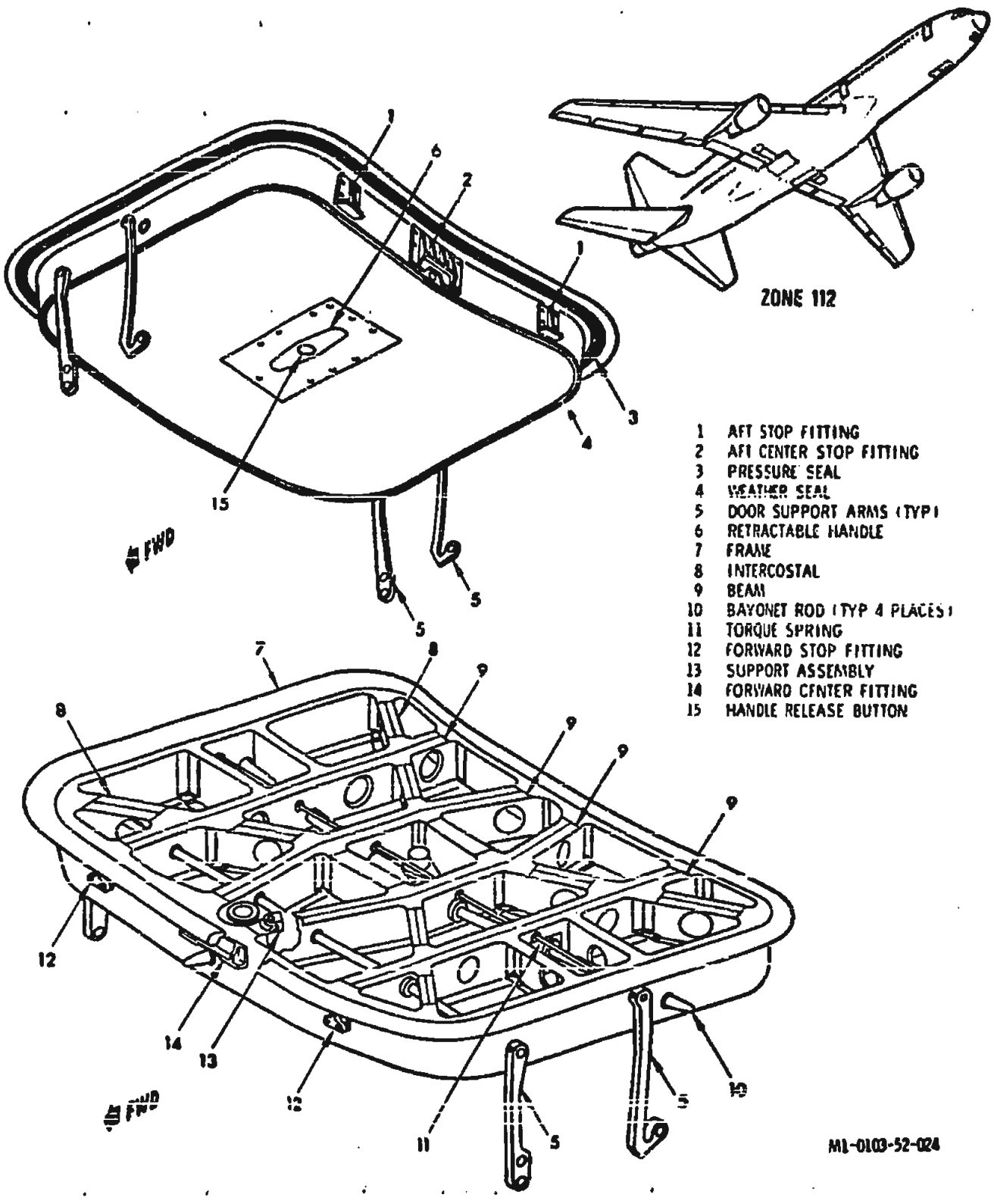
A silicone rubber seal encircles the door.

A proximity switch interfaces the door to indicate a latch-safe condition.

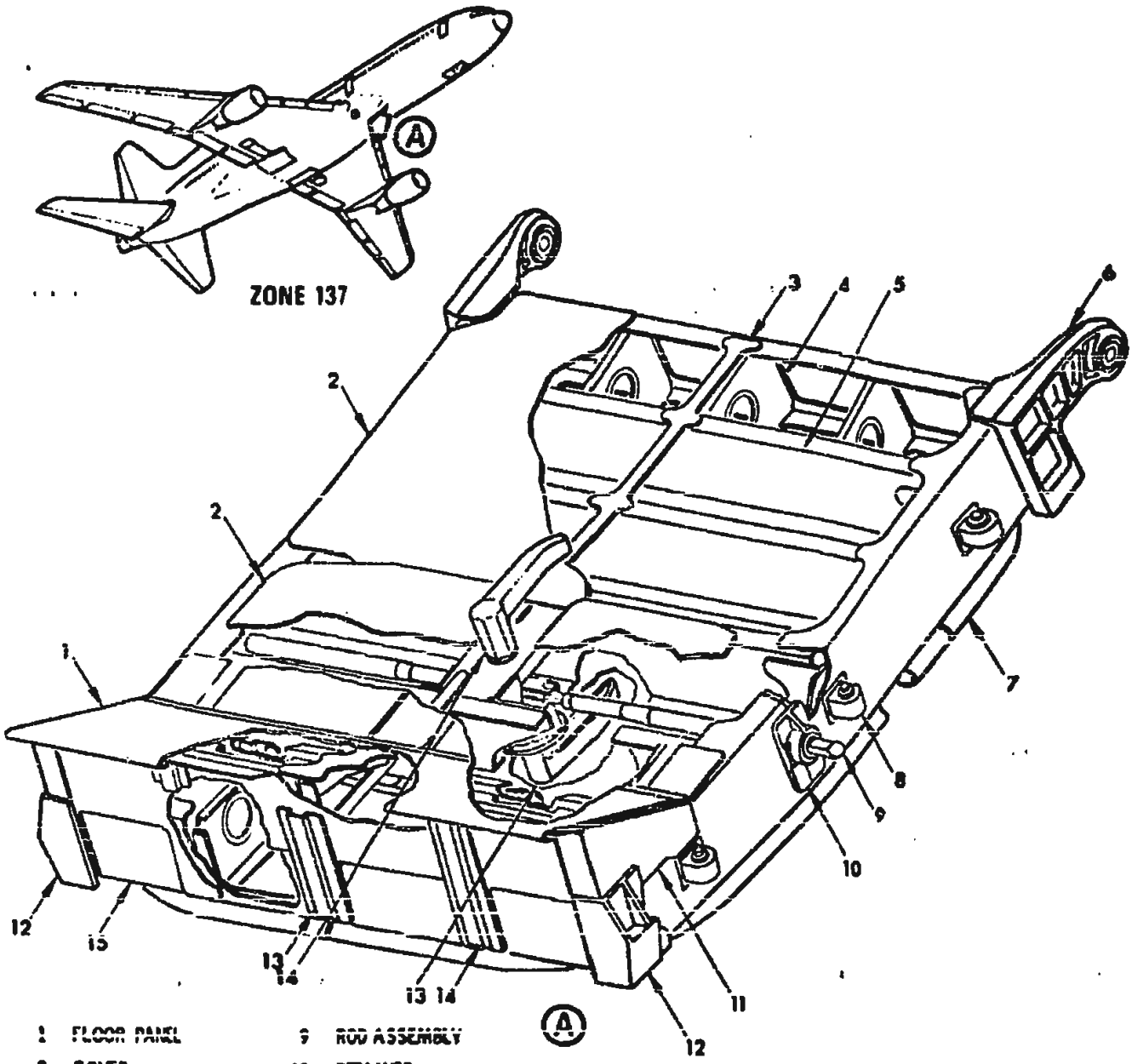
3. Mid Electrical Service Center (S-2) Fairing Door

A. Description

The mid electrical service center fairing door is located on the lower right side of the fuselage below the wing leading edge at approximately FS 957 (Ref. Fig. 3). The door, which is in the MLG fairing, provides access to the mid electrical service center S-2 door. The fairing door is a hinged panel approximately 40 inches long and 45 inches wide. The door latching mechanism consists of a handle-operated actuator connected to four bayonet type pins which engage adjustable serrated plates mounted on the door surround structure. The door can be opened from inside or outside the aircraft and the door can be retained in the open position with a support arm mounted on the fairing frame.



R R Forward Electronic Service Center (S-1) Door
Figure 1

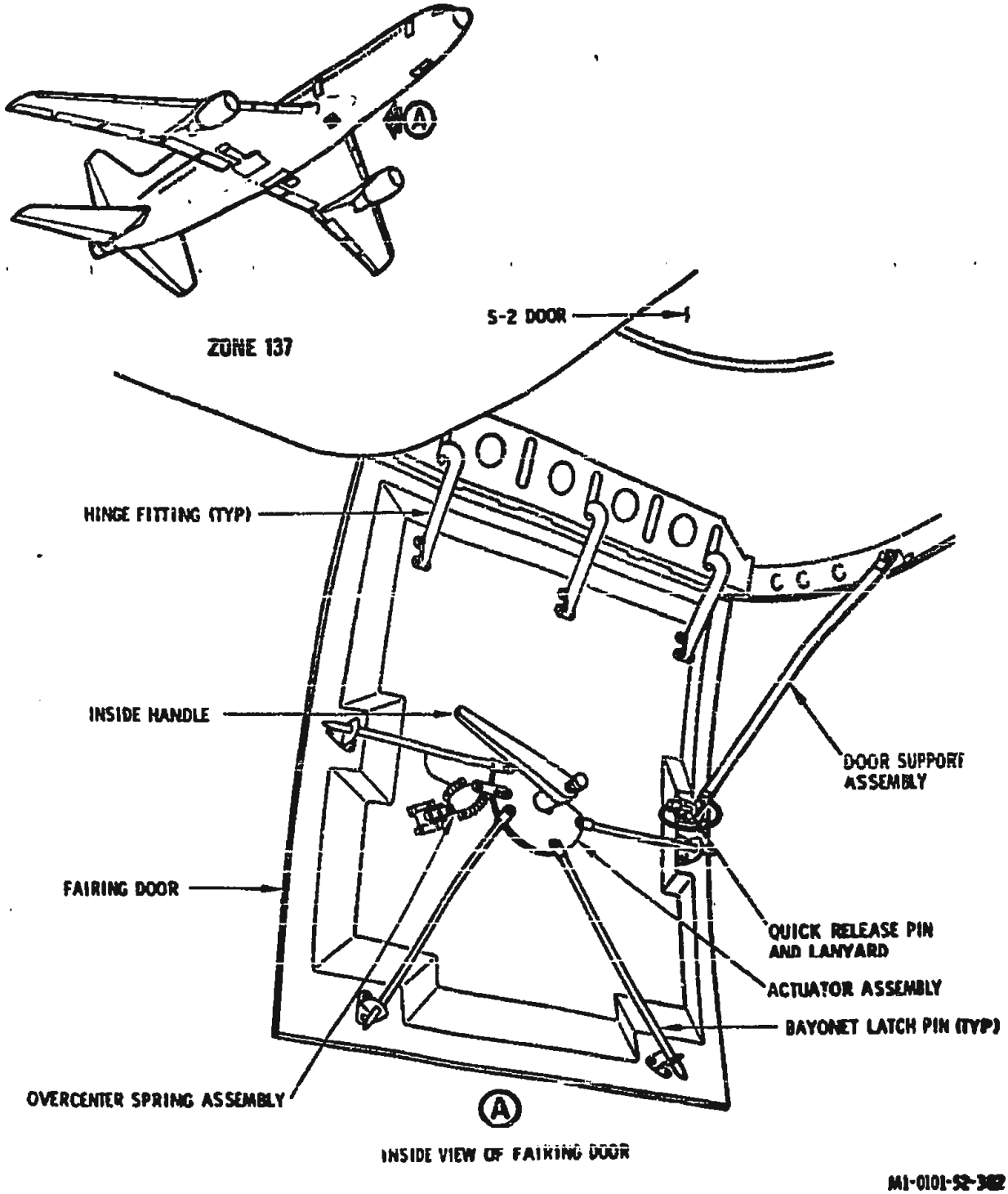


1	FLOOR PANEL	9	ROD ASSEMBLY
2	COVER	10	RETAINER
3	STRAP	11	SUPPORT
4	INTERCOSTAL	12	SIDE GUIDE
5	BEAM	13	LATCH HANDLE
6	HINGE FITTING	14	STIFFENER
7	SEAL	15	CHANNEL
8	DOOR STOP		

M1-0102-52-005

R
R

Mid Electrical Service Center (S-2) Door
Figure 2



M1-0101-52-302

R R Mid-electrical Service Center (S-2) Fairing Door
Figure 3

EFFECTIVITY: ALL

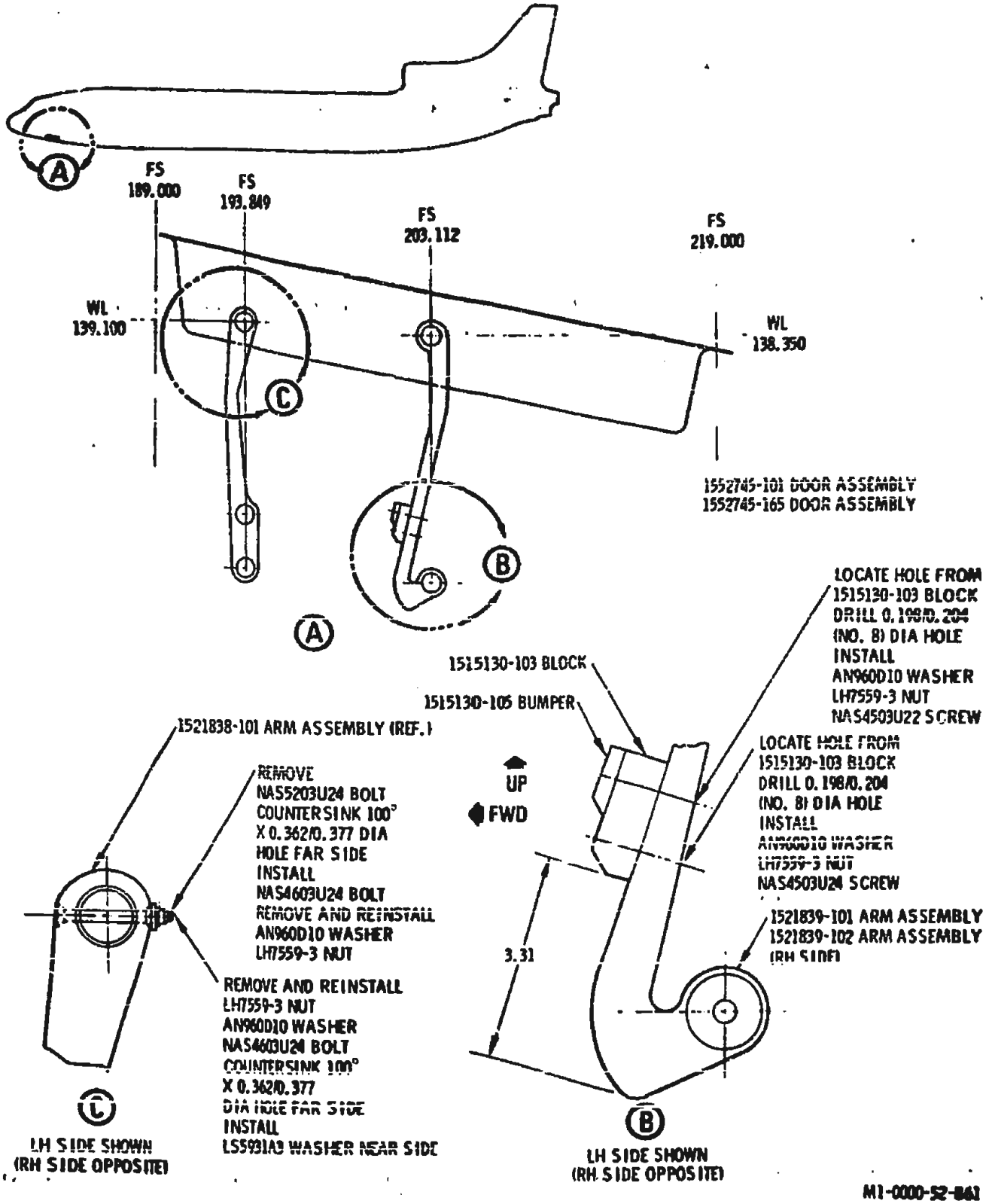
001B

CR FORWARD ELECTRONIC SERVICE CENTER DOOR
CR MAINTENANCE PRACTICES

CR 1. Flight Station Avionics Door Mod

CR A. The upper bolt on the forward arm of the flight station
CR avionics door was originally installed facing forward. When
CR the door closes, this bolt contacts the aircraft structure
CR and prevents the door from closing fully. M.O. 70F35
CR countersinks the forward side of the front arm and reverses
CR the bolt direction. It also installs a rubber bumper on the
CR other arm to keep the reversed bolt from contacting it.

CR NOTE: This M.O. will standardize the earlier aircraft with
CR the last five that were delivered.



M1-0000-52-841

CR
CR

Flight Station Avionics Door
Figure 201

R EFFECTIVITY: ALL
R
001B

FORWARD ELECTRONIC SERVICE CENTER DOOR - REMOVAL AND INSTALLATION

1. Equipment and Materials

Aluminum Laminated Shim Stock, MIL-S-22499, Comp 1, Type 1, or equivalent

Rivets, MS20427M3, or equivalent

Putty, leadmans tape, commercial grade, or equivalent

2. Referenced Procedures

52-43-07 Forward Electronic Service Center Door Handle Assembly - Removal and Installation

52-71-00 Door Warning System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Unlatch and open door.

CR C C C CAUTION: HINGE ARMS ARE SPRING LOADED BY TORSION BARS INSIDE DOOR. HINGE ARMS ARE UNLOADED ONLY WHEN POSITIONED APROXIMATELY 90° TO DOOR AS SHOWN IN FIGURE 401 VIEW A.

C C C C C C (2) Position door so that hinge arms are unloaded (arms approximately 90° to door). Support and secure door in that position, then remove bolts fastening arms to surround structure. Retain bolts for re-use (Ref. Figure 401).

C C C (3) Fold arms against spring force, then turn handle so that bayonet fittings extend through holes in arms.

C C C C WARNING: DO NOT TURN LATCH HANDLE WITH HINGE ARMS FOLDED AND RESTRAINED BY BAYONET FITTINGS. IF BAYONET FITTINGS ARE DISENGAGED FROM ARMS, THE ARMS WILL ROTATE RAPIDLY UNDER SPRING FORCE.

(4) Remove door through opening, and stow door in protected area.

B. Installation

CR WARNING: DO NOT TURN LATCH HANDLE WITH HINGE ARMS FOLDED
CR AND RESTRAINED BY BAYONET FITTINGS. IF BAYONET
CR FITTINGS ARE DISENGAGED FROM ARMS, THE ARMS WILL
CR ROTATE RAPIDLY UNDER SPRING FORCE.

(1) Verify that seal is installed.

CR (2) With hinge arms folded and restrained by latch bayonet
CR fittings, insert door through opening.

CR CAUTION: HINGE AMS ARE SPRING LOADED BY TORSION BARS INSIDE
CR DOOR. HINGE ARMS ARE UNLOADED ONLY WHEN
CR POSITIONED APPROXIMATELY 90° TO DOOR AS SHOWN IN
CR FIGURE 401 VIEW A.

CR (3) Holding hinge arms in folded position, turn handle to
CR disengage bayonet fittings.

(4) Allow arms to unfold slowly.

(5) Attach arms using bolts retained in Step 3A(2).

(6) Spread putty on top of stop shims approximately 0.090 inch thick.

(7) Close and latch door.

(8) Check outer mold line contour.

(9) Adjust bayonet fittings, if necessary, to allow door to be inside outer mold line contour within 0.030 - 0.090 inch.

(10) Check gap between door and stop shims as follows:

(a) Measure putty thickness on stop shims. Putty [Ref. Step (6)] thickness must be 0.030 to 0.090 inch.

(b) If gap is less than 0.030 inch, peel shims as required.

(c) If gap is more than 0.090 inch, remove old shims completely and rivet on new shims. Repeat Steps (6) through (10).

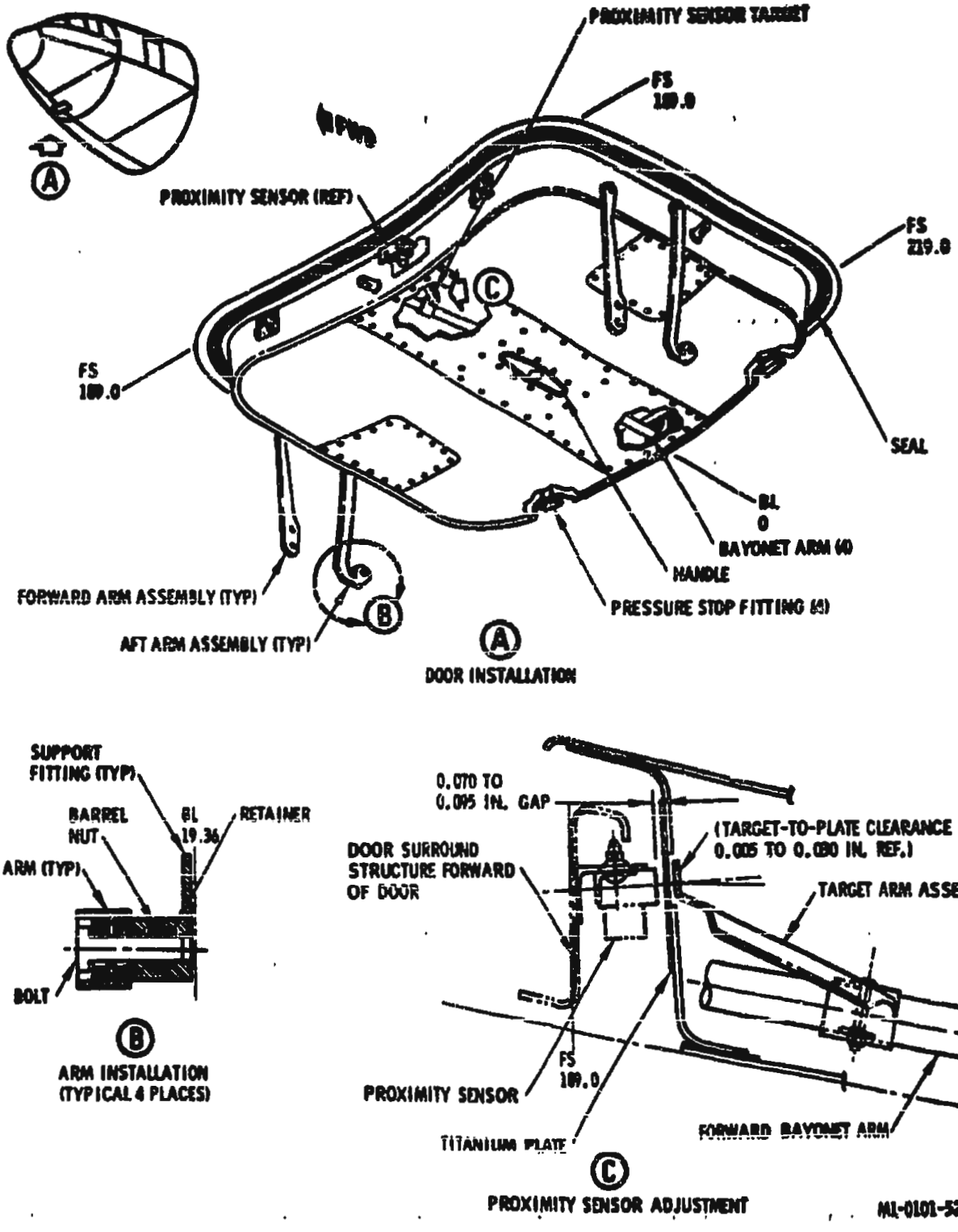
(d) Remove putty from stop shims.

(11) With door closed and latched, check gap between proximity sensor and target.

(12) Adjust proximity sensor (in clip slots) to obtain a 0.070-to 0.095-inch gap between sensor and titanium plate.

(13) Verify operation of door warning light (52-71-00). When door is latched, AVIONICS light on Flight Engineer/Second Officers annunciator panel is on. When door is closed and latched, light is off.

NOTE: If the door warning light cannot be made to operate within the normal adjustment range of the proximity sensor, check adjustment of the target arm assembly inside the door [Ref. Step (6), 52-43-07, Removal and Installation].



Forward Electronic Service Center Door - Removal and Installation
Figure 401

FORWARD ELECTRONIC SERVICE CENTER DOOR SEAL REMOVAL AND INSTALLATION

1. Equipment and Materials

Pry Bar

NOTE: The tool used to remove door seal should have a tapered wedge-shaped end with blunt edges, and must be wood or plastic.

2. Removal/Installation

A. Removal

CAUTION: DO NOT USE ANY METAL TOOLS WHEN REMOVING SEAL.

(1) Taking care not to damage seal retainer, pry up a section of seal with pry bar.

(2) Remove seal by hand.

B. Installation

(1) Insert inner edge of seal by hand, starting at one side and working gradually to the other.

NOTE: Do not install seal with splice over retainer joint.

(2) Using fingers, press seal firmly into place.

R NOTE: Ensure seal bleed holes face FESC.

(3) Close door and visually check for proper alignment of seal with surround structure.

MID ELECTRICAL SERVICE CENTER (S-2) DOOR REMOVAL AND INSTALLATION

1. General

These procedures are for removing a mid electrical service center (S-2) door and installing the same door at the same location. If a door, other than the one removed, is to be installed refer to adjustment and test procedure (Ref. 52-43-03).

2. Referenced Procedure

52-43-03 Mid Electrical Service Center (S-2) Door - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Unlatch and open door.

R (2) On aircraft without SB53-257,
R with door supported, remove hinge bolts and retain.

R (2) On aircraft with SB53-257,
R with door supported, remove hinge bolts, detach jumper
R cable, and retain hinge bolts.

(3) Remove door and stow in protected area.

B. Installation

(1) Support door so that door hinge holes align with holes in attach structure.

(2) On aircraft without SB53-257,
R install hinge bolts.

(2) On aircraft with SB53-257,
R install hinge bolts and jumper cable.

(3) Verify door operation.

MID ELECTRICAL SERVICE CENTER (S-2) DOOR - ADJUSTMENT AND TEST

1. General

This procedure specifies the required rigging adjustments when a replacement door is installed.

2. Equipment and Materials

Lock-wire, Fed Spec QQ-W-390, 0.040-inch diameter, or equivalent

3. Referenced Procedures

52-43-03 Mid Electrical Service Center (S-2) Door - Removal and Installation

52-43-04 Door Seal - Removal and Installation

4. Adjustment/Test

A. Rigging Adjustments

(1) Remove door seal (Ref. 52-43-04).

(2) Remove wire locks from adjustment bolts and retain for re-use.

R CAUTION: AT BOTH SIDES OF DOOR, VERIFY THAT BUSHINGS ARE INSTALLED WITH SHOULDERS ON OUTBOARD SIDE OF DOOR PRESSURE STOPS.

(3) Install door (Ref. 52-43-03, Removal and Installation).

(4) With door closed and locked, locate door outer skin surface 1.29 (±0.03) inside fuselage contour outer mold line by adjusting six adjustment bolts against brackets. Install wire locks removed in Step 4A(2).

(5) Locate hinge supports into nearest serrations on face of hinge adjustment plate.

NOTE: Avoid compressing elastomers within hinge bearings.

(6) Install and tighten six bolts on hinge supports.

(7) Lock-wire bolt hinges.

(8) With door open, verify that rod assemblies actuate freely by rotating latch handle against spring.

(9) Verify that a force of 8 pounds at a distance of 4.5 inches (36-inch pounds) from centerline of pivot spindle shaft is felt against handle rotation.

(10) Verify that pushing in toward center of door on rod, in the engaged position, there is no tendency to disengage.

(11) Verify that rod is overcenter in engaged position.

(12) Close door and place handle in engaged position.

(13) Locate striker plate into nearest serrations on face of striker plate support; maintain a 0.03- to 0.08-inch gap between striker plate and rod on each side of door.

(14) Tighten six bolts on striker plates.

(15) Verify that clearance between door and side guides is 0.03 to 0.04 inch.

(16) Verify that rods extend through structure 0.72 (±0.04) inch. Safety each rod with lock-wire.

(17) Install seal (Ref. 52-43-04).

(18) With door closed and latched, check clearance between proximity switch and target link.

(19) Obtain a 0.15 (±0.03) inch gap between proximity switch and target link by adjusting switch.

B. Test

(1) Close and latch door.

(2) Verify that force on handle required to engage or disengage latches does not exceed 35 pounds at a distance of 4.5 inches from centerline of pivot spindle.

(3) Unlatch and raise door until hold-open pin on door engages hook.

(4) Shake door to verify that hook retention is positive.

(5) Close and latch door.

(6) Verify operation of door warning light. When door is unlatched, MAIN ELEC light on Flight Engineer/Second Officers annunciator panel is on. When door is closed and latched, light is off.

MID ELECTRICAL SERVICE CENTER (S-2) DOOR SEAL REMOVAL AND INSTALLATION

1. Equipment and Materials

Pry Bar

NOTE: The tool used to remove seal should have a tapered, wedge-shaped end with blunt edges, and must be wood or plastic.

2. Referenced Procedures

52-43-03 Mid Electrical Service Center (S-2) Door - Removal and Installation

52-43-03 Mid Electrical Service Center (S-2) Door - Adjustment and Test

3. Removal/Installation

A. Removal

(1) Using care to prevent damage to seal retainer, pry up a section of seal with the pry bar.

CAUTION: DO NOT USE ANY METAL TOOLS WHEN STARTING SEAL REMOVAL AS SEAL MAY BE DAMAGED.

(2) Remove seal by hand.

B. Installation

NOTE: Before installing seal, door must be installed in aircraft and adjusted (Ref. 52-43-03, Removal and Installation, and Adjustment and Test).

(1) Insert outer edge of seal by hand, starting at one side and working gradually to the other.

(2) Using fingers, press seal firmly into place.

R NOTE: Ensure seal bleed holes face MESC.

MID ELECTRICAL SERVICE CENTER (S-2) FAIRING DOOR REMOVAL AND INSTALLATION

1. Equipment and Materials

Antichafing compound, LAC Spec LCM40-1218, Type II, no equivalent

Mold Release Compound, Specialty Products Co., Resin Release N, or equivalent

Talc, Purified U.S.P. Grade, 200 Mesh, or equivalent

2. Referenced Procedure

LCP78-1080 Antichafing Protection of Structure Contacting External Doors and Fillets

3. Removal/Installation

A. Removal

(1) Unlatch and open door.

(2) With door supported, remove bolts, nuts, and washers securing mechanical hinge assemblies to hinge support brackets and save for re-use.

(3) Lower door and stow in protected area.

B. Installation

(1) Check condition of antichafing compound on door contact surface. Repair, if necessary, to 0.010 to 0.020-inch thickness in accordance with LCP78-1080.

(2) Apply talc and mold release compound (Ref. LCP78-1080).

(3) Raise and support door so that hinge holes align with holes in structure support fittings.

(4) Install bolts, nuts, and washers.

(5) Close and latch door.

(6) Check door skin for flushness with fuselage skin. Adjust serrated face plate at each locking pin to achieve flushness within +0.03 to -0.09 inch. The door

R must not be loose at any point. If door looseness is
R encountered, readjust door as required.

FAIRING DOOR HANDLE ASSEMBLY - REMOVAL AND INSTALLATION

1. Equipment and Materials

R Lock-wire, Fed Spec QQ-W-390, 0.032-inch diameter, or equivalent

R Cotter pin, MS24665-130

R 2. Referenced Procedure

R 52-43-05 Mid-Electrical Service Center (S-2) Fairing Door - R Removal and Installation

R 3. Removal/Installation

A. Removal

(1) Unlatch and open door.

R (2) Remove inside handle as follows:

R (a) Remove handle throughbolt, washer, and nut (Ref. R Fig. 401).

R (b) Remove inside handle with rod assembly and spring.

R (c) Retain attachment hardware as required for R reinstallation.

R (3) Remove outer handle as follows:

R (a) Remove two screws from handle retainer fitting.

R (b) Remove handle retainer fitting.

R (c) Remove handle with spring from handle housing.

R (d) Retain attachment hardware as required for R reinstallation.

R (4) Remove handle housing as follows:

R (a) Remove bayonet pin attachment hardware from handle R actuator assembly.

R (b) Remove overcenter spring attachment pin and washer R from handle actuator assembly.

R (c) Remove handle housing/inner flange attaching nuts, screws, and washers.

R (d) Remove actuator assembly, housing assembly, and inner flange.

R (e) Retain attachment hardware as required for reinstallation.

R B. Installation

R (1) Install handle housing as follows:

R (a) Install handle housing in door cavity.

R (b) Align inner flange with attachment holes on inboard side of door. Install screws in handle housing as required to mate with inner flange. Install washers and nuts finger-tight.

R (c) Install actuator assembly.

R (d) Complete installation of handle housing/inner flange and tighten all nuts. Verify that actuator assembly turns freely.

R (e) Install bayonet pin end-fittings on actuator assembly with four bolts, washers and nuts.

R (f) Install overcenter springs on actuator spring support plate, using pin, washers, and cotter pin.

R NOTE: Install washer under pin head and next to cotter pin. Use remaining washers on each side of springs as required to clear spring from support plate (5 washers required).

R (2) Install outer handle as follows:

R (a) Insert outer handle, with spring, into handle housing.

R (b) Install handle retainer fitting with two screws.

R (c) Tighten retainer fitting screws and install lock-wire.

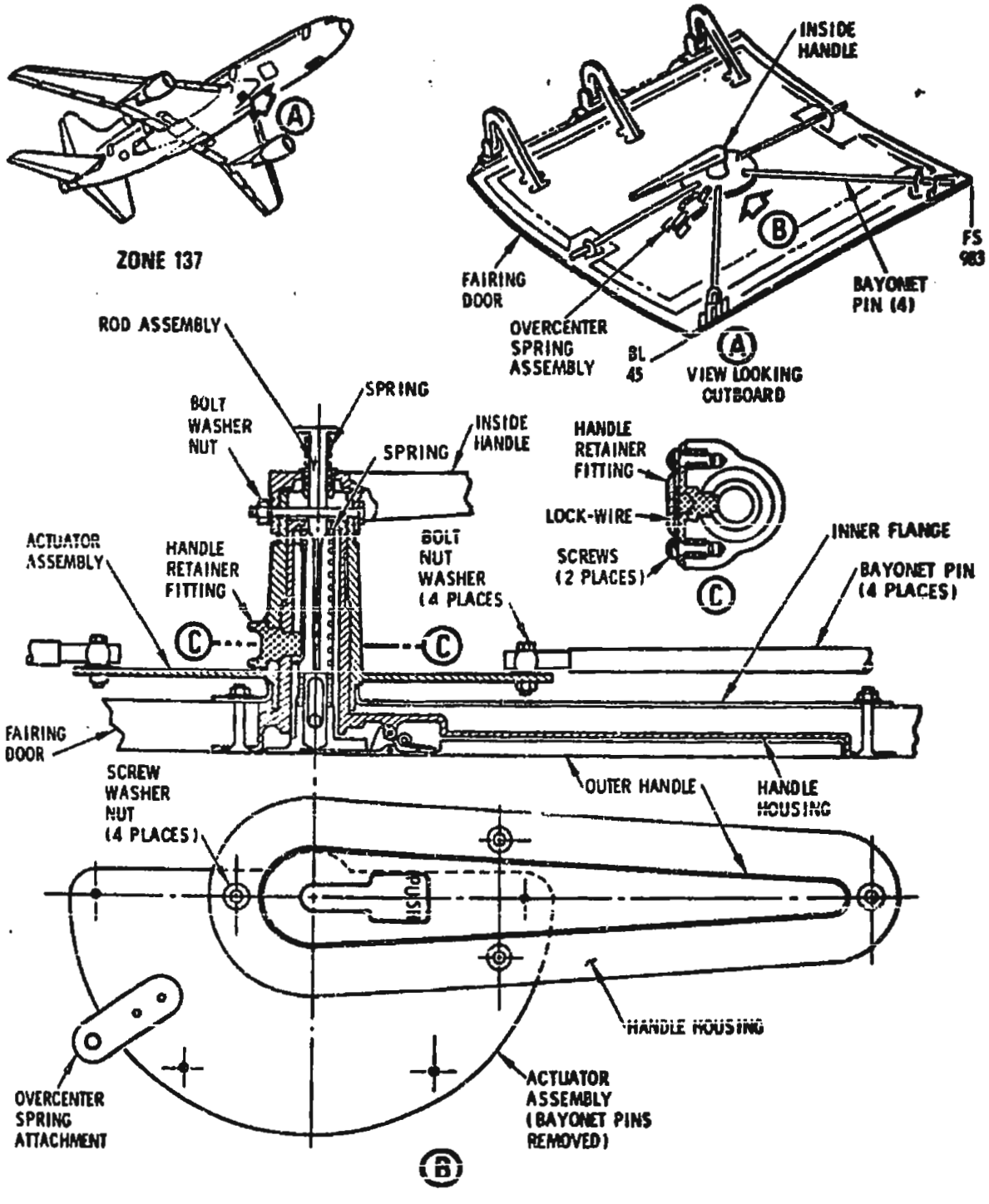
R (3) Install inside handle as follows:

R (a) Install handle with rod assembly and spring on actuator assembly.

R R (b) Align handle and install through bolt washer and nut.

R (4) Verify operation of inside and outside handles.

R R (5) Close door and verify operation. Adjust door if required (Ref. 52-43-05).



M1-0100-52-383

R Fairing Door Handle Assembly - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL
R
R
001B

R FORWARD ELECTRONIC SERVICE CENTER DOOR HANDLE ASSEMBLY
R REMOVAL AND INSTALLATION

R 1. Referenced Procedure

R 52-43-01 Forward Electronic Service Center Door - Removal
R and Installation

R 2. Removal/Installation

R A. Removal

R (1) Remove forward electronic service center door from
R aircraft (Ref. 52-43-01).

R (2) Remove three access plates from door (Ref. Fig. 401).
R Retain bolts for reinstallation.

R (3) Remove bayonet arm assemblies from door as follows:

R (a) Rotate handle toward locked position until bayonet
R arm/cam attachment screw heads are aligned with
R screw access holes in base assembly.

R (b) Remove screw and roller from each bayonet arm
R assembly.

R (c) Remove target assembly from forward arm. Retain
R target assembly and fasteners for reinstallation.

R NOTE: If forward bayonet arm can be removed with
R target attached, target assembly can be
R removed after arm is removed from door.

R (d) Remove bayonet arm assemblies from door.

R (4) Remove two flush-head bolts that fasten handle base
R assembly to door structure. Retain bolts for
R reinstallation.

R (5) Remove handle base assembly from door.

R B. Installation

R (1) Install bayonet arm assemblies in door as follows:

R (a) On forward bayonet arm install target but do not
R tighten bolt.

(b) Install each arm into its proper support bearing as identified (Ref. Fig. 401).

(c) Slide each arm outboard.

(2) Place base/handle assembly (with FWD orientation marks forward) in position on door structure.

(3) Connect each bayonet arm to door handle cam plate with roller and screw.

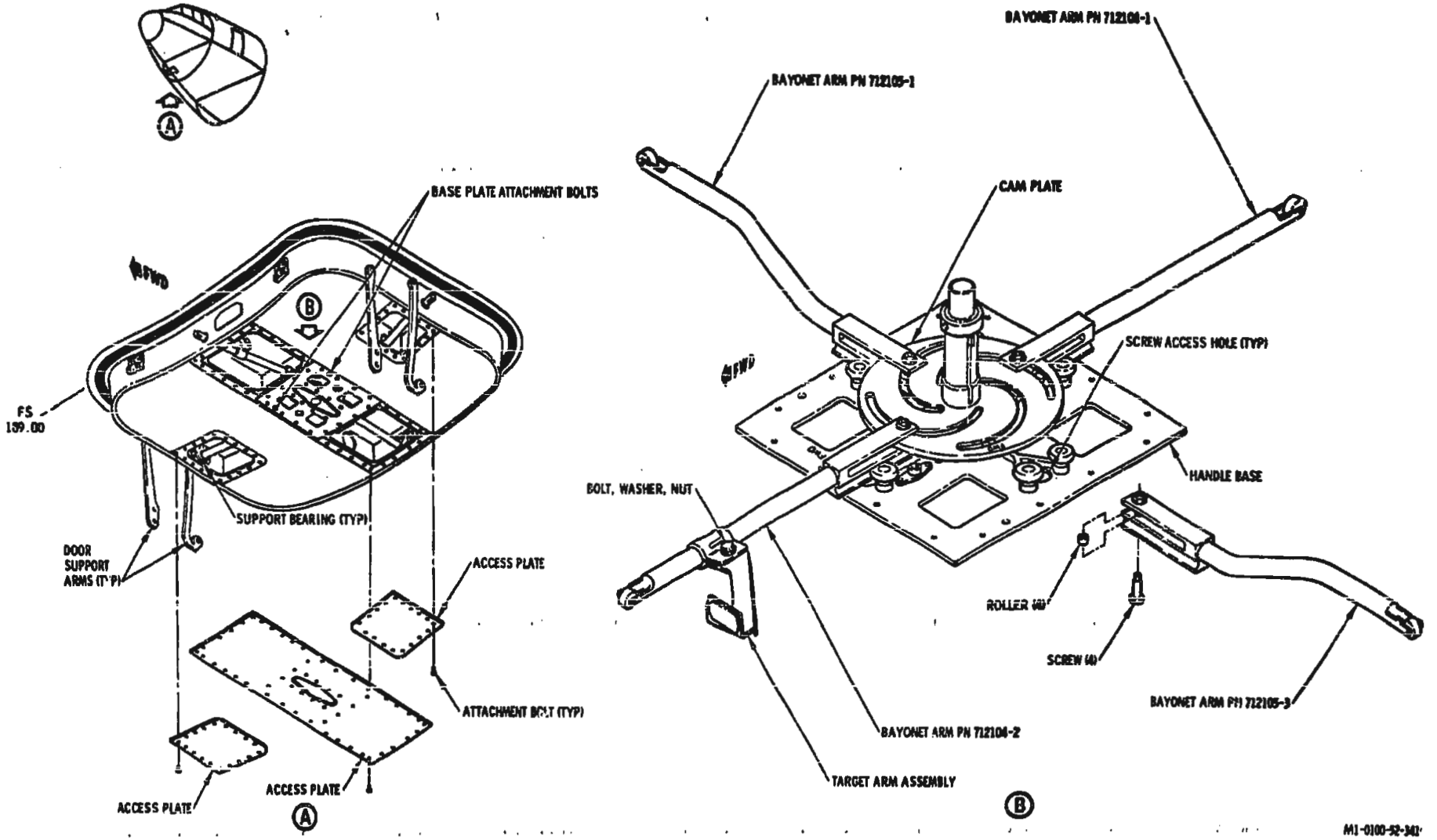
(4) Install door handle assembly on door with two flush-head bolts in countersunk holes of base assembly.

(5) Rotate handle toward locked position until arm/cam attachment screw heads are aligned with access holes in base. Tighten screw at each bayonet arm.

(6) With door handle in locked position adjust target arm to center the target in the cutout against titanium doubler. After tightening target arm clamp bolt, R verify target to be 0.005 to 0.030 inch from inner face of titanium plate.

(7) Install door access plates.

(8) Install forward electronic service center door on aircraft (Ref. 52-43-01).



R Forward Electronic Service Center Door Handle Assembly - Removal and
R Installation
R Figure 401

R EFFECTIVITY: ALL
R
001B

ENVIRONMENTAL CONTROL SYSTEM ACCESS DOOR DESCRIPTION AND OPERATION

1. General

There are two environmental control system (ECS) access doors, one on each side of the nose landing gear doors in zones 117 and 118.

Each door is approximately 40 inches square. The door framework consists of clad aluminum alloy ribs and formers which are covered with inner and outer clad aluminum alloy skins. Each door has three hinge fittings on the outboard side which are connected to the door surround structure by bolts and nuts.

Each door is equipped with a prop to hold the door open while maintenance is being performed on the ECS system. The prop is held in place, with the door in the open or closed position, by a quick-release pin.

The doors are held in the closed position by bayonet rods. The rods are moved, to lock and unlock the door, by a linkage system.

ENVIRONMENTAL CONTROL SYSTEM ACCESS DOOR REMOVAL AND INSTALLATION

1. General

The two environmental control system access doors are similar; the procedures to remove and install the doors are the same.

2. Equipment and Materials

Antichafing compound, LAC Spec LCP78-1080, no equivalent

Cotter Pins, MS24665-153, or equivalent

3. Removal/Installation

A. Removal

R (1) Turn door latch handle to unlocked position.

R (2) Open door to convenient position for access to hinges
R (Ref. Fig. 401).

R (3) With door supported, remove bolts, washers and nuts securing hinge points.

(4) Lower door and stow in protected area.

B. Installation

(1) If required, apply antichafing compound 0.050-inch thick to land area around door.

(2) Raise and support door so that hinge holes align with holes in structure support fittings.

(3) Install bolts, nuts, and washers in hinges. Use new cotter pins.

R (4) Close and lock door. Door must fit snugly against door
R support surface. Adjust if necessary.

R (5) At each latch adjustment point requiring adjustment
R proceed as follows:

R (a) With ECS door being held snugly against door
R support surface, measure and record clearance

R between latch rod and striker plate at each latch
R adjustment point.

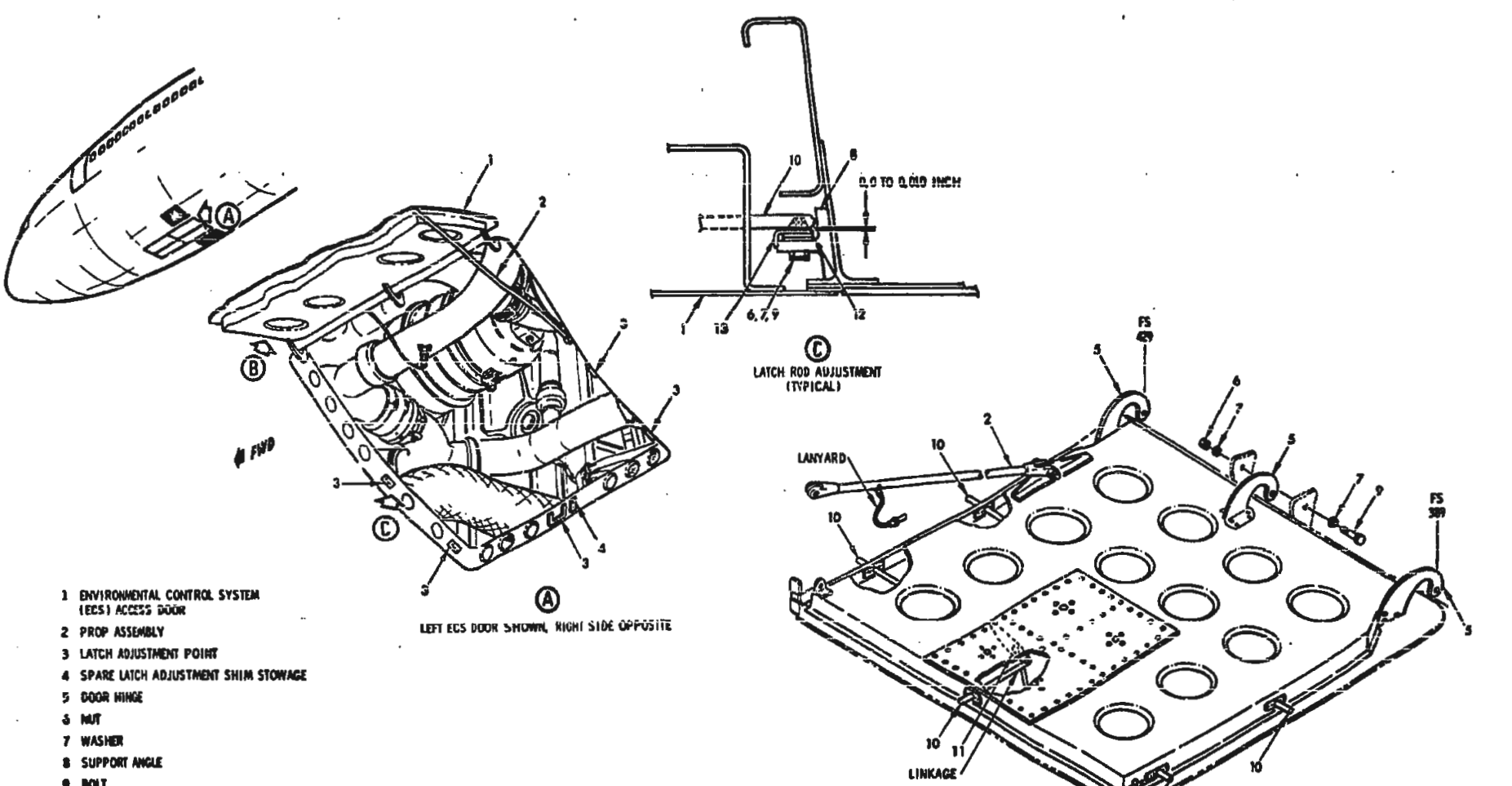
R (b) At latch adjustment points requiring adjustment,
R remove striker plate and add or remove shims as
R required to obtain referenced clearance between
R rod and striker plate.

R NOTE: Spare shims are stowed on longeron adjacent
R to door.

R (c) Striker plate must be installed with inner face of
R lip firmly against edge of support angle.

R (d) Install bolts, washers and nuts.

R (6) Close and lock door.



1 ENVIRONMENTAL CONTROL SYSTEM (ECS) ACCESS DOOR
2 PROP ASSEMBLY
3 LATCH ADJUSTMENT POINT
4 SPARE LATCH ADJUSTMENT SHIM STOWAGE
5 DOOR HINGE
6 NUT
7 WASHER
8 SUPPORT ANGLE
9 BOLT
10 LATCH ROD
11 LATCH HANDLE
12 LATCH ADJUSTMENT SHIM
13 STRIKER PLATE

R Environmental Control System Access Door - Removal and Installation
R Figure 401

R EFFECTIVITY: ALL
R
001B

R HYDRAULIC SERVICE CENTER DOOR - DESCRIPTION AND OPERATION

R 1. General

R The two hydraulic service center doors, 147AB and 147BB, are
R located on the keelson centerline between the main landing gear
R doors. The doors are 20.0 inches long and 24.8 inches wide.
R Piano hinges are mounted along the forward edge of each door.

R The door structure is fibrous nylon core honeycomb with aluminum
R face sheets and glass fabric edge closure.

R The forward door is equipped with ventilating louvers and a
R proximity switch target. The proximity switch removes power
R from the service center control panel when the door is closed.
R The aft door has a bracket in the forward left corner which
R prevents it from being installed at the forward location.

R Each door has two thumb-operated flush latches on the aft edge.
R Each door has two stay-open links which are automatically
R engaged when the door is opened. Before closing the door, the
R links must be manually released by pushing up.

R HYDRAULIC SERVICE CENTER DOOR - REMOVAL AND INSTALLATION

R 1. General

R The procedures for removal and installation of the forward and
R aft hydraulic service center doors 147AB and 147BB are the same
R except that the forward door requires adjustment of the
R proximity switch target clip following installation.

R 2. Equipment and Materials

R Cotter Pins, MS24665-151, or equivalent

R Antichafing Compound, LAC Spec LCM40-1218, Type II, or
R equivalent

R Mold Release Compound, Specialty Products Co., Resin Release N,
R or equivalent

R Talc, Purified U.S.P. Grade, 200 Mesh, or equivalent

R Corrosion-preventive Compound, MIL-C-11796, Class 3, or
R equivalent

R Rust-preventive Oil, Fed Spec VV-L-800, or equivalent

R 3. Referenced Procedures

R LCP78-1080, Antichafing Protection of Structure Contacting
R External Doors and Fillets

R LCP-78-1128, Application of Corrosion Preventive Materials

R 4. Removal/Installation

R A. Removal

R (1) Open door 147AB or 147BB to locked position.

R (2) With door properly supported, remove screws securing
R stay-open links to door and retain for re-use.

R NOTE: Stay-open links remain in aircraft.

R (3) Remove hinge pins.

R (4) Lower door and stow in protected area.

R B. Installation

R (1) Check condition of antichafing compound on door contact R surfaces around doorway; repair, if necessary, to a R thickness of 0.010 to 0.020 inch in accordance with R LCP78-1080.

R (2) Apply talc and mold release compound (Ref. LCP78-1080).

R (3) Apply corrosion-preventive compound on hinge pins in R accordance with LCP78-1128.

R (4) Apply rust-preventive oil on hinge pins.

R (5) Support door so that hinge halves are in line.

R (6) Slide hinge pins in from centerline of door outward.

R (7) Attach stay-open links using hardware retained in Step R 4A(2).

R (8) Install new cotter pins in stay-open links.

R (9) Verify door operation and latch for smoothness of R operation.

R (10) Verify door alignment and clearance (0.06- to 0.12-inch R gap).

R NOTE: The following Steps [4B(10) through 4B(14)] R apply to forward door only.

R (11) Verify that landing gear manual shutoff R valves/hydraulic service center door interlock is R retracted.

R (12) Loosen screws securing target clip to inside surface of R forward right corner of door.

R (13) With door closed, move clip inboard or outboard to R obtain 0.125 (±0.025) inch gap between target clip and R proximity switch.

R (14) Tighten screws.

R (15) Check gap.

R # RAM AIR TURBINE DOORS - REMOVAL AND INSTALLATION

R 1. General

R The ram air turbine (RAT) doors are located on the bottom
R centerline of the aircraft between FS 1170 and FS 1210 (zone
R 142).

R This procedure describes removal, installation, and adjustment
R of both doors with the RAT deployed.

R If desired, door replacement or adjustment can be accomplished
R with the RAT stowed. If this alternative is employed, the RAT
R must be rendered safe by deactivation of electrical circuits as
R described in referenced procedures and by appropriate measures
R to ensure that the RAT cannot be deployed accidentally.

R 2. Equipment and Materials

R	Cotter pins	MS24665-151
R	Grease	MIL-G-21164
R	Lube Oil	VV-L-800, or equivalent

R 3. Referenced Procedures

R	29-21-00	Ram Air Turbine System - Maintenance Practices
R	29-21-00	Ram Air Turbine System - Adjustment and Test
R R	29-21-11	Ram Air Deployment Actuator - Removal and Installation

R 4. Removal/Installation

R The RAT doors can be replaced with the RAT retracted or
R extended.

R A. Removal

R WARNING: NORMAL UNCONSTRAINED RAT DEPLOYMENT IS EXPLOSIVELY
R FAST. BEFORE DEPLOYING RAT TAKE EXTREME CARE TO
R ENSURE THAT THE AREA BELOW AND ADJACENT TO THE RAT
R DOORS IS CLEAR OF ALL PERSONNEL AND EQUIPMENT. DO
R NOT STAND DIRECTLY AFT OF RAT DURING DEPLOYMENT.

WARNING: IF SAFETY LOCK IS INSTALLED, USE CAUTION WHEN REMOVING SAFETY LOCK. IF WING SCREWS TURN HARD OR IF DOOR MOVES WITH SAFETY LOCK, VERIFY THAT RAT IS IN FULL UPLOCK CONDITION BEFORE REMOVING SAFETY LOCK (UPLOCK POSITION INDICATOR BUTTON SHOULD BOTTOM).

(1) Prepare for RAT door removal as follows:

(a) If doors are to be removed with RAT stowed, open and tag circuit breakers RAT MAN DEPLOY (B14) and RAT AUTO DEPLOY (L3), located on pilots overhead circuit breaker panel CB1, zone 210. Disconnect RAT uplock squib actuator electrical connector and
R cover receptacle with plastic cap. Verify RAT is in the full uplock condition (Ref. Step 4A WARNING).

(b) If doors are to be removed with RAT deployed, deploy RAT [Ref. 29-21-11, Removal and Installation, Para. 3A, Steps (1) through (3)(g)].

R (c) With RAT deployed, verify electrical connector to RAT uplock squib actuator assembly is disconnected and receptacle is covered with plastic cap.

(d) Open hydraulic service center forward access door (147AB), and access panel forward of RAT doors (142GB).

(2) Disconnect door actuating rods from each door as follows:

(a) At each actuating rod clevis connection to door swivel pin, remove cotter pin.

(b) Remove nut, washers, and bolt.

(c) Retain hardware for re-installation.

NOTE: Do not change length of rod-end clevis.

(3) Remove each door as follows:

(a) Remove bolt from hinge lock clip.

(b) Remove hinge lock clip from hinge pins.

(c) Support RAT door and remove hinge pins from door hinges.

(d) Remove door.

B. Installation

(1) Engage door hinged edge with door surround structure hinge and insert hinge pins.

NOTE: Door swivel fittings are located on the aft half of each door. The bent ends of each hinge pin should be oriented near the center of each door.

(2) Install hinge lock clips on bent ends of hinge pins and attach with bolt.

CR C C (3) Check adjustment and free - swivel movement of swivel assembly and the door actuating rod-end clevis as follows (Ref. Fig. 401).

C C (a) Retainer adjustment must be within tolerances shown.

C C C NOTE: Hex cutout on inner skin of door must engage retainer to prevent rotation of retainer.

C (b) Swivel pin must turn freely.

C C (4) If the swivel and/or clevis assembly requires adjustment, correct as follows:

C C (a) Remove screws from swivel nut (on outside surface of door).

C (b) Remove swivel nut by using a spanner wrench.

C (c) Separate swivel pin from swivel retainer.

C C (d) Lubricate swivel pin, swivel retainer and swivel nut liberally with (MIL-G-23827 spec) grease.

C C C (e) Install swivel retainer in hex cutout on inner surface of door; then install swivel pin and swivel nut into door structure.

C C (f) Check swivel adjustment tolerances and clearances (Ref. Fig. 401).

C C C C C C C NOTE: Swivel nut screw holes must align with the mating thread receptacles. If not, disassemble the parts, index the retainer to the next hex notch, reassemble the parts and check alignment of swivel nut screw holes with thread receptacles. Continue this procedure until (1) the screw holes

CR align perfectly and (2) the tolerances
CR shown in Fig. 401 are complied with. Do
CR not reverse the nut tightening procedure to
CR align the screw holes.

CR If the clearance between the rod clevis
C fork end ID and the mating OD of the swivel
C pin is less than .006 inches, remove
C material equally from the flats on the
C swivel pin to obtain the minimum clearance
C dimension in this pivoting joint (Ref. Fig.
C 401, View H).

C (g) Install swivel nut attachment screws.

C (h) Assure that the swivel pin now turns freely and
C that the adjustment requirements are satisfactory.

C (i) Turn the rod-end clevises in and out as required
C to verify that they turn freely and show evidence
C of lubrication. If required, lubricate rod-end
C clevises with VV-L-800 lubricant and reassemble
C clevis on door actuating rod.

C (j) Adjust to lengths as follows:

Nominal length of each door actuating rod (measured from centers of attachment bolts) is 6.34 inches for LH door rod and clevis, and 6.32 inches for RH door rod and clevis. Final adjustments are made when adjusting door fits and clearances.

(5) With the RAT in stowed position perform the following steps to check door fit:

(a) Attach a door actuating rod to a swivel fitting and check for minimum clearance of 0.025 inch between swivel retainer and actuating rod clevis, with swivel pin bottomed in swivel nut cavity. If clearance is less than 0.025 inch, adjust swivel assembly to obtain specified clearance [Ref. Step (4)(a) through (f)].

(b) Check for clearance gap around door. Gap must be 0.03 to 0.09 inch between ends of each door and adjacent interfacing skin.

(c) Clearance gap between inboard edges of doors must be 0.03 to 0.06 inch.

(6) Check flushness of doors at FS 1202. (The swivel pin and clevis connection is located at approximately FS 1202.) If doors are not flush to contour adjust as follows:

NOTE: The RAT-to-door operating linkages should be adjusted whenever they have been disconnected and any changes made which could affect door fit. One door at a time should be adjusted. After each door has been adjusted the RAT can be lowered and link installation completed.

(a) Verify that RAT is resting in the uplock and hoisting loads have relieved.

(b) Adjust door rod-end clevis in 1/2-turn increments until door closes flush. After one door has been adjusted lower door and adjust the remaining door rod-end clevis in 1/2-turn increments until door closes flush.

NOTE: Left rod clevis has RH thread, right rod clevis has LH thread.

R (7) When door adjustment is completed, verify installation of bolts, washers and nuts. Hand-tighten nuts and back off one slot (maximum) and install cotter pin.

(8) Lubricate door actuating rod joints (top and bottom) with oil VV-L-800, or equivalent.

NOTE: Door actuating rod linkage, pivots, and swivel should be lubricated each time the RAT is restowed.

(9) Restow RAT (Ref. 29-21-10, 201).

(10) Verify proximity sensor/target gap of 0.125 (±0.025) inch. If adjustment is necessary add or remove shim stock between sensor target and support bracket, as required.

(11) Perform Ram Air Turbine Deployment Test (Ref. 29-21-00, Adjustment and Test, Para. 4B).

(12) Install RAT ground safety bar.

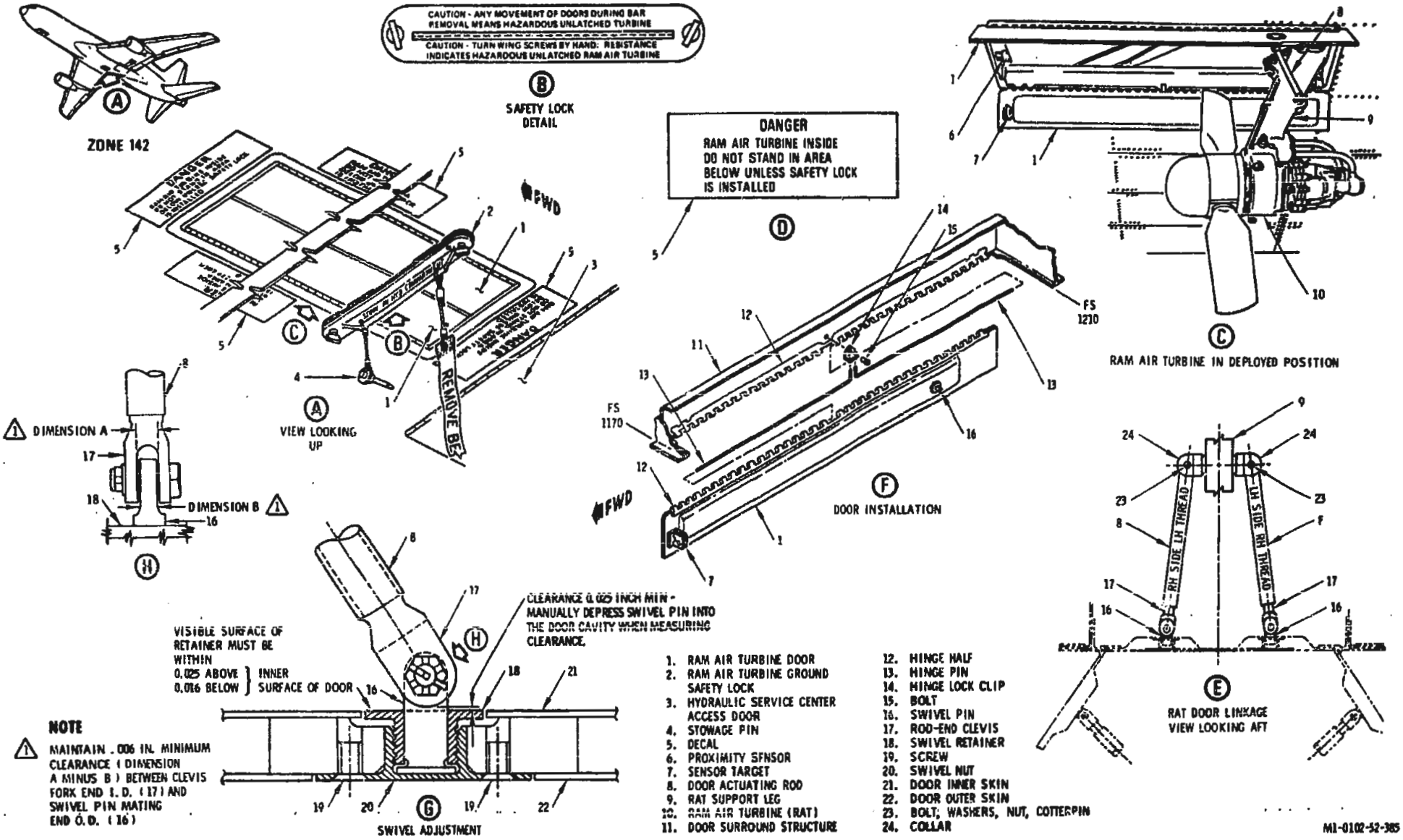
(13) Remove hoist and sling if used.

(14) Connect electrical connector to RAT uplock squib actuator.

(15) Lower switch guard over RAT GROUND TEST switch and install breakaway wire.

(16) Remove tags and close circuit breakers opened in Step 4A(1).

(17) Close access door and panel opened in Step 4A(1)(d).



NOTE

MAINTAIN .006 IN. MINIMUM CLEARANCE (DIMENSION A MINUS B) BETWEEN CLEVIS FORK END I. D. (17) AND SWIVEL PIN MATING END O.D. (16)

1. RAM AIR TURBINE DOOR
2. RAM AIR TURBINE GROUND SAFETY LOCK
3. HYDRAULIC SERVICE CENTER ACCESS DOOR
4. STOWAGE PIN
5. DECAL
6. PROXIMITY SENSOR
7. SENSOR TARGET
8. DOOR ACTUATING ROD
9. RAT SUPPORT LEG
10. RAM AIR TURBINE (RAT)
11. DOOR SURROUND STRUCTURE
12. HINGE HALF
13. HINGE PIN
14. HINGE LOCK CLIP
15. BOLT
16. SWIVEL PIN
17. ROD-END CLEVIS
18. SWIVEL RETAINER
19. SCREW
20. SWIVEL NUT
21. DOOR INNER SKIN
22. DOOR OUTER SKIN
23. BOLT; WASHERS, NUT, COTTERPIN
24. COLLAR

M1-0102-52-385

CR
CR

Ram Air Turbine Doors - Removal and Installation
Figure 401

EFFECTIVITY: ALL

0018

FIXED INTERIOR DOORS - DESCRIPTION AND OPERATION

1. General

The fixed interior doors consist of the flight station door and the FS 943 galley wall door.

The lavatory doors are described in 25-42-00, and the galley lift doors are described in 25-32-00.

FLIGHT COMPARTMENT DOOR - DESCRIPTION AND OPERATION

1. General

The lockable flight station door (Ref. Fig. 1) is installed between the flight compartment and the passenger area in the fixed partition at FS 253. The door is a single-panel honeycomb core unit with bonded decorative plastic sheeting surfaces. The latch mechanism can be released from the pilots seated position, or it can be key-operated from outside the flight compartment. The latch can be deactivated on the ground to permit free access for maintenance.

The door is designed to be manually forced open to permit crew egress if the door is jammed in the closed position.

The door hinge is segmented for maintenance ease.

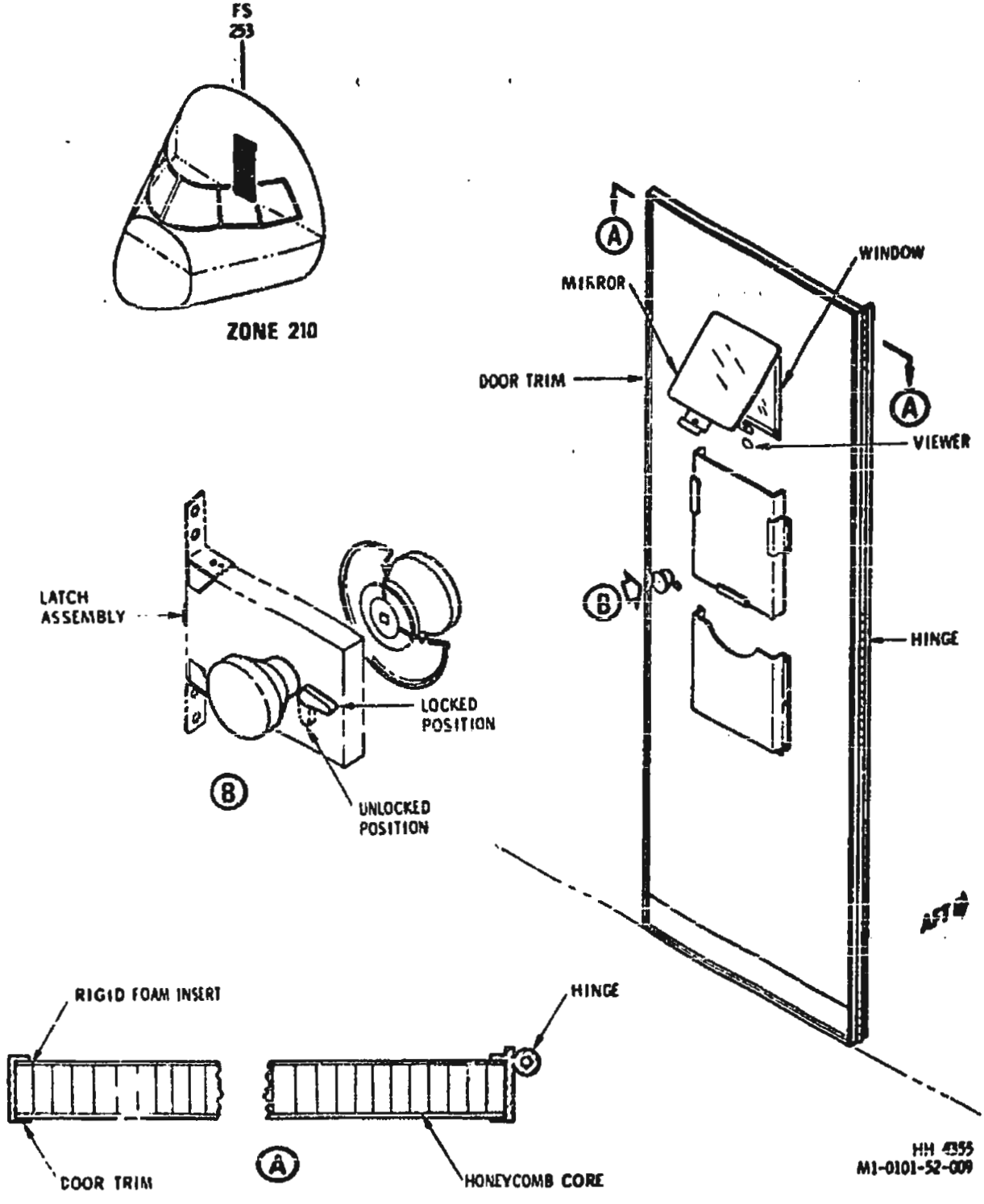
A window in the door allows a view of the cabin area. A hinged mirror on the forward side of the door covers the window. A wide-angle viewing lens below the window permits observation of the cabin area in the vicinity of the door, without uncovering the window.

2. Flight Compartment Door Release Solenoid-actuated Strike

A. Description

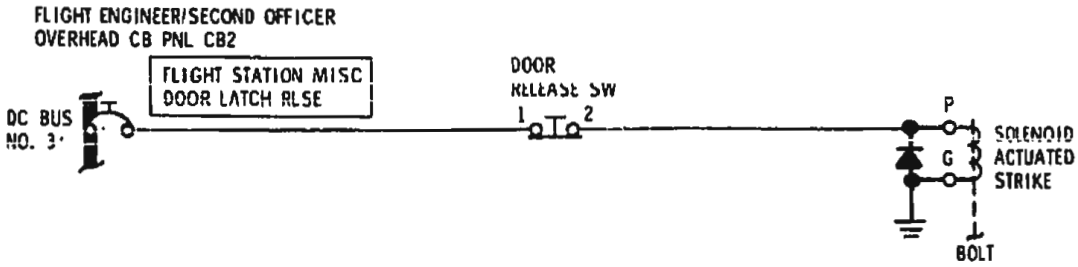
The solenoid-actuated strike enables flight crewmembers to open the flight compartment door without having to leave their stations. The door release switch is in the aft end of the center console. The solenoid is in the flight compartment door partition. Both are in zone 211.

The solenoid is continuously energized to keep the door locked when dc power is on (Ref. Fig. 2). There are two mechanical overrides. The door knob in the flight compartment side and a key-operated lock in the passenger cabin side of the door will retract the strike bolt. Power shutdown will also release the bolt.



R
R

Flight Compartment Door
Figure 1



HH 5053
EM1-A00-52-029

Flight Compartment Door Electric Release Strike Schematic
Figure 2

R # FLIGHT COMPARTMENT DOOR - FAULT ISOLATION

R 1. General

R The diagrams in this section can be used for fault isolation any time a fault is reported or suspected. The PREREQUISITES listed at the top of each fault isolation diagram must be satisfied prior to starting fault isolation. Uncommon abbreviations are defined on the using fault code diagram or schematic.

R If the flight crew reports a trouble using a fault code number, the code number can be found in the Fault Isolation Reference Table in the Chapter 52 Fault Code Index. The index specifies the exact maintenance manual section, fault isolation diagram, and block number on the diagram where the fault isolation procedure should start.

R Refer to the Maintenance Manual Introduction for a more detailed discussion of the Fault Isolation Reporting Method (FIRM) and use of fault isolation diagrams.

R 2. Fault Isolation/Identification

R Table 101 lists the fault isolation diagrams and schematics in this section.

R Table 101

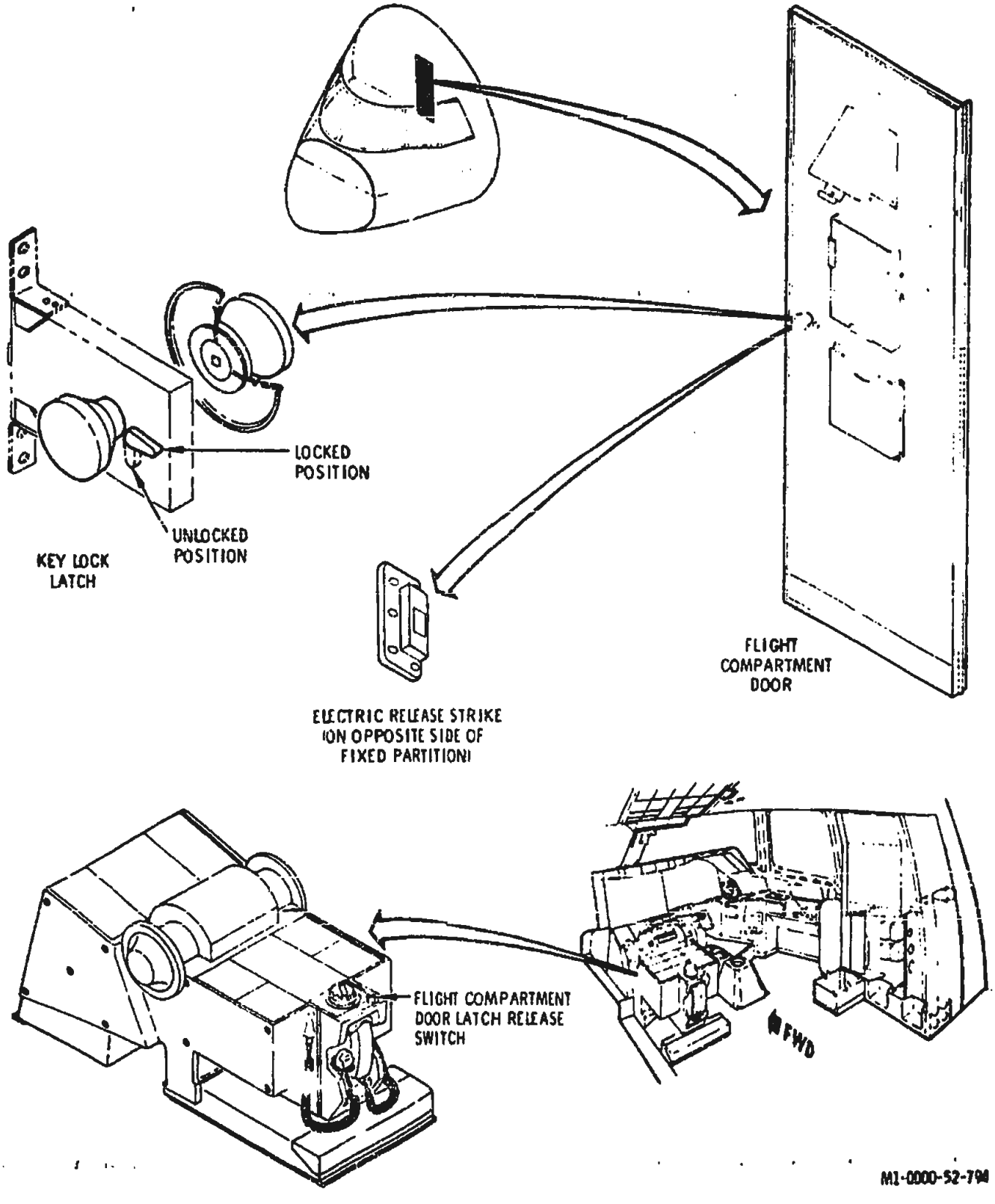
FIGURE	TITLE
101	Component Locator Index
102	Component Locator Diagram
103	Flight Compartment Door and Latch Fault Isolation

COMPONENT	QTY	AREA/ACCESS	REFERENCE
FLIGHT COMPARTMENT DOOR	1	FIXED PARTITION, FS 253, ZONE 210	52-51-01
ELECTRIC RELEASE STRIKE	1	FIXED PARTITION, FS 253, ZONE 210	52-51-02
KEY LOCK LATCH	1	FIXED PARTITION, FS 253, ZONE 210	52-51-03
FLIGHT COMPARTMENT DOOR LATCH RELEASE SWITCH	1	FLIGHT STATION CENTER CONSOLE, ZONE 210	52-51-04

M1-0000-52-783

R Flight Compartment Door Component Location Index
R Figure 101

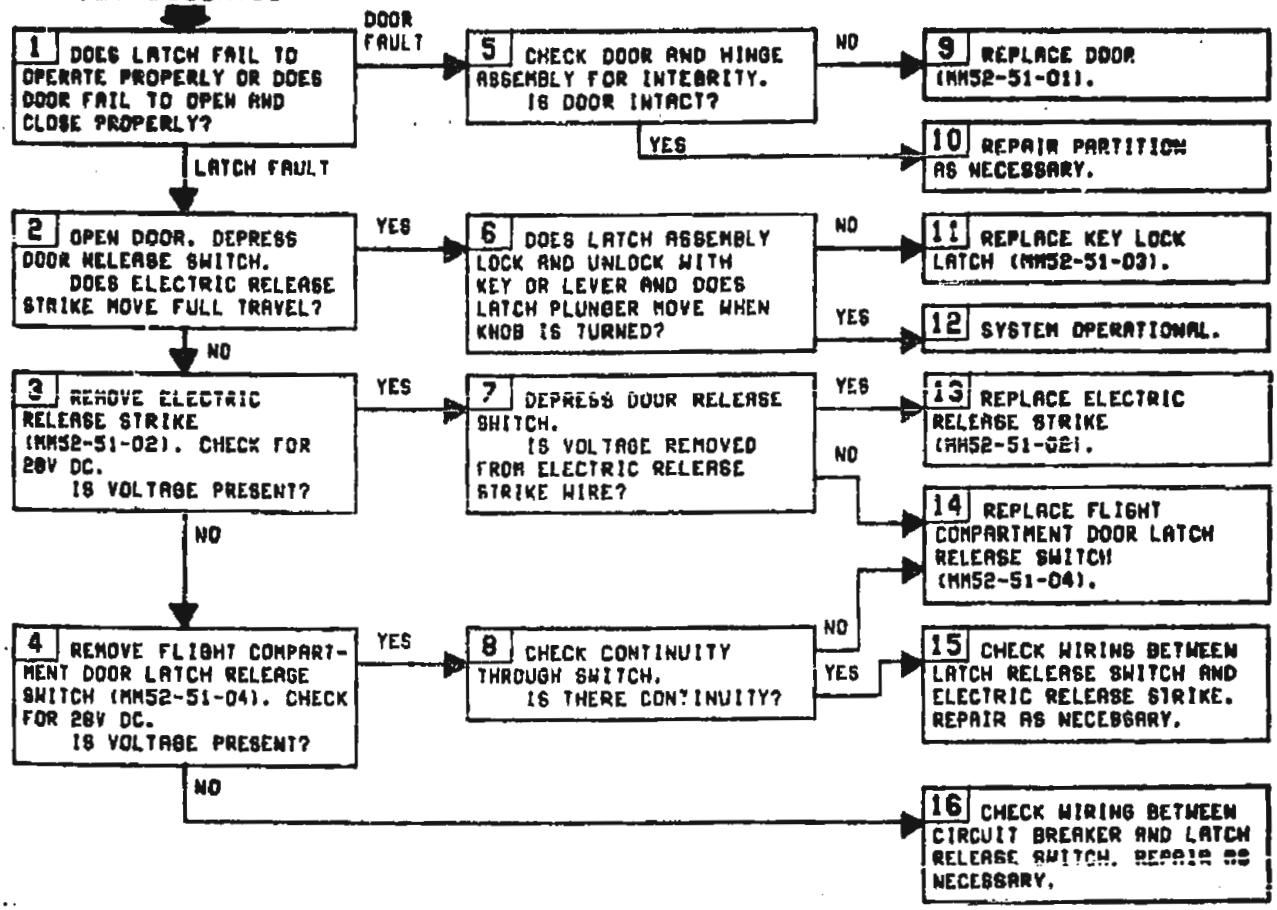
R EFFECTIVITY: ALL
R
001B



R Flight Compartment Door Component Location Diagram
R Figure 102

PREREQUISITES
ELECTRICAL POWER (MM24-41-00)
CB'S: 2F8

FLIGHT COMPARTMENT DOOR AND LATCH FAULT ISOLATION


1 DOES LATCH FAIL TO OPERATE PROPERLY OR DOES DOOR FAIL TO OPEN AND CLOSE PROPERLY?
DOOR FAULT
LATCH FAULT
2 OPEN DOOR. DEPRESS DOOR RELEASE SWITCH. DOES ELECTRIC RELEASE STRIKE MOVE FULL TRAVEL?
YES
NO
3 REMOVE ELECTRIC RELEASE STRIKE (MM52-51-02). CHECK FOR 28V DC. IS VOLTAGE PRESENT?
YES
NO
4 REMOVE FLIGHT COMPARTMENT DOOR LATCH RELEASE SWITCH (MM52-51-04). CHECK FOR 28V DC. IS VOLTAGE PRESENT?
YES
NO
5 CHECK DOOR AND HINGE ASSEMBLY FOR INTEGRITY. IS DOOR INTACT?
NO
YES
6 DOES LATCH ASSEMBLY LOCK AND UNLOCK WITH KEY OR LEVER AND DOES LATCH PLUNGER MOVE WHEN KNOB IS TURNED?
NO
YES
7 DEPRESS DOOR RELEASE SWITCH. IS VOLTAGE REMOVED FROM ELECTRIC RELEASE STRIKE WIRE?
YES
NO
8 CHECK CONTINUITY THROUGH SWITCH. IS THERE CONTINUITY?
NO
YES
9 REPLACE DOOR (MM52-51-01).
10 REPAIR PARTITION AS NECESSARY.
11 REPLACE KEY LOCK LATCH (MM52-51-03).
12 SYSTEM OPERATIONAL.
13 REPLACE ELECTRIC RELEASE STRIKE (MM52-51-02).
14 REPLACE FLIGHT COMPARTMENT DOOR LATCH RELEASE SWITCH (MM52-51-04).
15 CHECK WIRING BETWEEN LATCH RELEASE SWITCH AND ELECTRIC RELEASE STRIKE. REPAIR AS NECESSARY.
16 CHECK WIRING BETWEEN CIRCUIT BREAKER AND LATCH RELEASE SWITCH. REPAIR AS NECESSARY.

NOTE
REFERENCE MM52-51-00, 101 FIGURE 2 FOR ELECTRICAL SCHEMATIC.

R Flight Compartment Door and Latch Fault Isolation
R Figure 103

R FLIGHT COMPARTMENT DOOR - REMOVAL AND INSTALLATION

R 1. Removal/Installation

R A. Removal

R (1) Open door.

R (2) With door supported, remove screws attaching hinge to
R partition and save for re-use.

R (3) Remove door and stow in protected area.

R B. Installation

R (1) Support door so that hinge screw holes align with nuts.

R (2) Install screws.

R (3) Close and open door to verify operation.

R (4) Close and latch door.

R ELECTRIC RELEASE STRIKE - REMOVAL AND INSTALLATION

R 1. Removal/Installation

R A. Removal

R (1) On Flight Engineer/Second Officers overhead circuit breaker panel CB2, zone 216, open and tag circuit breaker FLIGHT STATION MISC DOOR LATCH RLSE.

R (2) Open flight compartment door.

R (3) Remove screws securing strike to panel and save for re-use.

R (4) Disconnect electrical wiring.

R (5) Remove strike.

R B. Installation

R (1) Verify that circuit breaker opened in Step A(1) is open and tagged.

R (2) Connect electrical wiring.

R (3) Install strike in panel with screws.

R (4) Remove tag and close circuit breaker opened in Step A(1).

R (5) Verify door operation.

R KEY LOCK LATCH - REMOVAL AND INSTALLATION

R 1. Removal/Installation

R A. Removal

R (1) Open door.

R (2) Loosen setscrew and remove knob.

R (3) Remove screws attaching latch to door and save for
R re-use.

R (4) Remove latch.

R B. Installation

R (1) Insert latch in door.

R (2) Install screws.

R (3) Install knob and tighten setscrew.

R (4) Verify door operation.

R R # FLIGHT COMPARTMENT DOOR LATCH RELEASE SWITCH REMOVAL AND INSTALLATION

R 1. Referenced Procedures

R 25-12-12 Pilots Handset Holder - Removal and Installation

R 25-13-05 Center Console Trim Covers - Removal and Installation

R 2. Removal/Installation

R A. Removal

R CAUTION: DO NOT REMOVE RUDDER/AILERON TRIM CONTROL ASSEMBLY.

R (1) Remove switch shield (threaded) and nameplate.

R (2) On the center console loosen aft fasteners on left and right side trim covers (Ref. 25-13-05).

R (3) Remove screws from mike holder and handset hanger (Ref. 25-12-12).

R (4) Remove aft trim cover (Ref. 25-13-05).

R (5) Remove switch jamnut and push switch down through lower access hole in console aft bulkhead.

R (6) Record wire number-to-switch terminal configuration. Disconnect wires and remove switch.

R B. Installation

R (1) Install wires on switch as recorded in Step 2A(6).

R (2) Install switch in center console rear bulkhead.

R (3) Verify operation of door latch release system.

R (4) Install aft trim cover (Ref. 25-13-05).

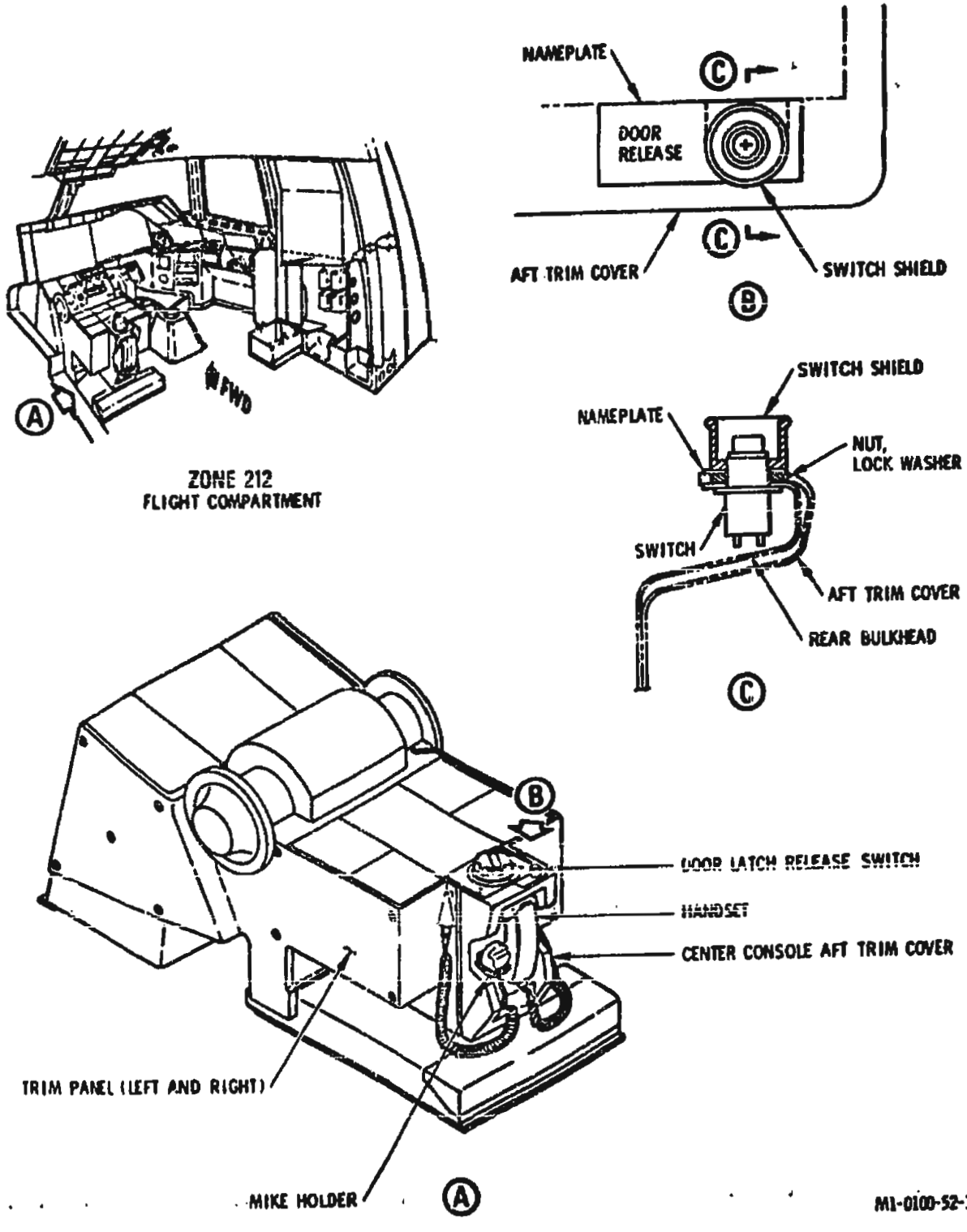
R (5) Install mike holder and handset hanger (Ref. 25-12-12).

R (6) Install center console left and right side trim covers (Ref. 25-13-05).

R (7) Install nameplate and switch shield.

R EFFECTIVITY: ALL

001B



R R Door Latch Release Switch - Removal and Installation
Figure 401

R EFFECTIVITY: ALL
R R
0018

R # INTERIOR SERVICE DOORS - DESCRIPTION AND OPERATION

R 1. Galley Wall Door

R A. Description

R The galley wall door is located at the aft end of the galley
R at FS 943 next to the galley elevator.

R The door is approximately 18 by 49 inches. The structure
R consists of a clad aluminum skin with extruded aluminum
R stiffeners on the aft side.

R The door is hinged on the upper edge by a piano-type hinge.
R The door opens forward and upward; the door can be opened
R from the forward or aft side. A hold-open support mechanism
R is provided to hold the door in the open position.

R The latching mechanism is operated by a handle on either the
R forward or aft side of the door. The mechanism consists of
R bayonet rods, levers, and springs.

R A window is provided for viewing the electrical load center.

R 2. Flight Compartment Below-deck Access Door

R A. Description

R The flight compartment below-deck access door is located in
R the flight compartment foor at FS 251.

R The door provides in-flight access to the forward electronic
R service center.

R The door structure consists of fibrous nylon core honeycomb
R with aluminum alloy face sheets. A vinyl covering is
R provided on the upper side. The edges of the covering are
R held in place by an aluminum extrusion.

R The latch is located in the forward edge, and may be
R operated from both sides.

R A piano-type hinge is provided on the aft edge.

R A support is provided to hold the door open. The support is
R automatically self-engaging when the door is opened. Before
R closing the door, the support must be manually released by
R pushing it forward.

R # GALLEY WALL DOOR - REMOVAL AND INSTALLATION

R 1. Removal/Installation

R A. Removal

R (1) Open door to convenient position for acess to hinge.

R (2) With door supported, remove screws, nuts, and washers
R attaching upper hinge half to partition and save for
R re-use.

R (3) Remove door and stow in protected area.

R B. Installation

R (1) Support door so that hinge half screw holes align with
R holes in partition.

R (2) Install screws, washers, and nuts.

R (3) Operate door to verify operation of door and latch.

R R **FLIGHT COMPARTMENT BELOW DECK ACCESS DOOR REMOVAL AND INSTALLATION**

R 1. Referenced Procedure

R 52-53-01 Door Covering - Removal and Installation

R 2. Removal/Installation

R A. Removal

R (1) Unlatch and open door.

R (2) Remove screws attaching hold-open suport to door.

R (3) Remove hinge pin.

R (4) Remove door and stow in protected area.

R B. Installation

R (1) Place door in opening so hinge halves align.

R (2) Install hinge pin.

R (3) Install screws in hold-open support.

R (4) If required, install new door cover (Ref. 52-53-01).

R (5) Verify door operation.

R R
FLIGHT COMPARTMENT BELOW-DECK ACCESS DOOR COVERING REMOVAL AND INSTALLATION

R 1. Equipment and Materials

R R Tape, ARNO C-706, 2.75 inches wide, ARNO Adhesive Tapes, Inc., or equivalent

R 2. Removal/Installation

R A. Removal

R (1) Remove screws attaching trim strips to door panel.

R (2) Remove trim strips.

R (3) Remove door covering.

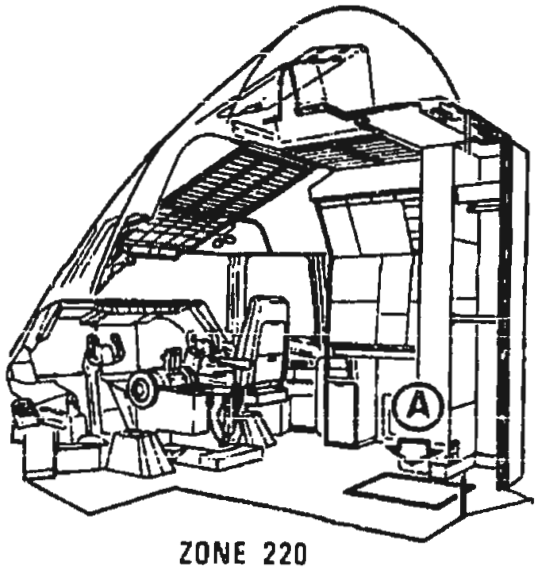
R (4) Remove double-faced tape and discard.

R B. Installation

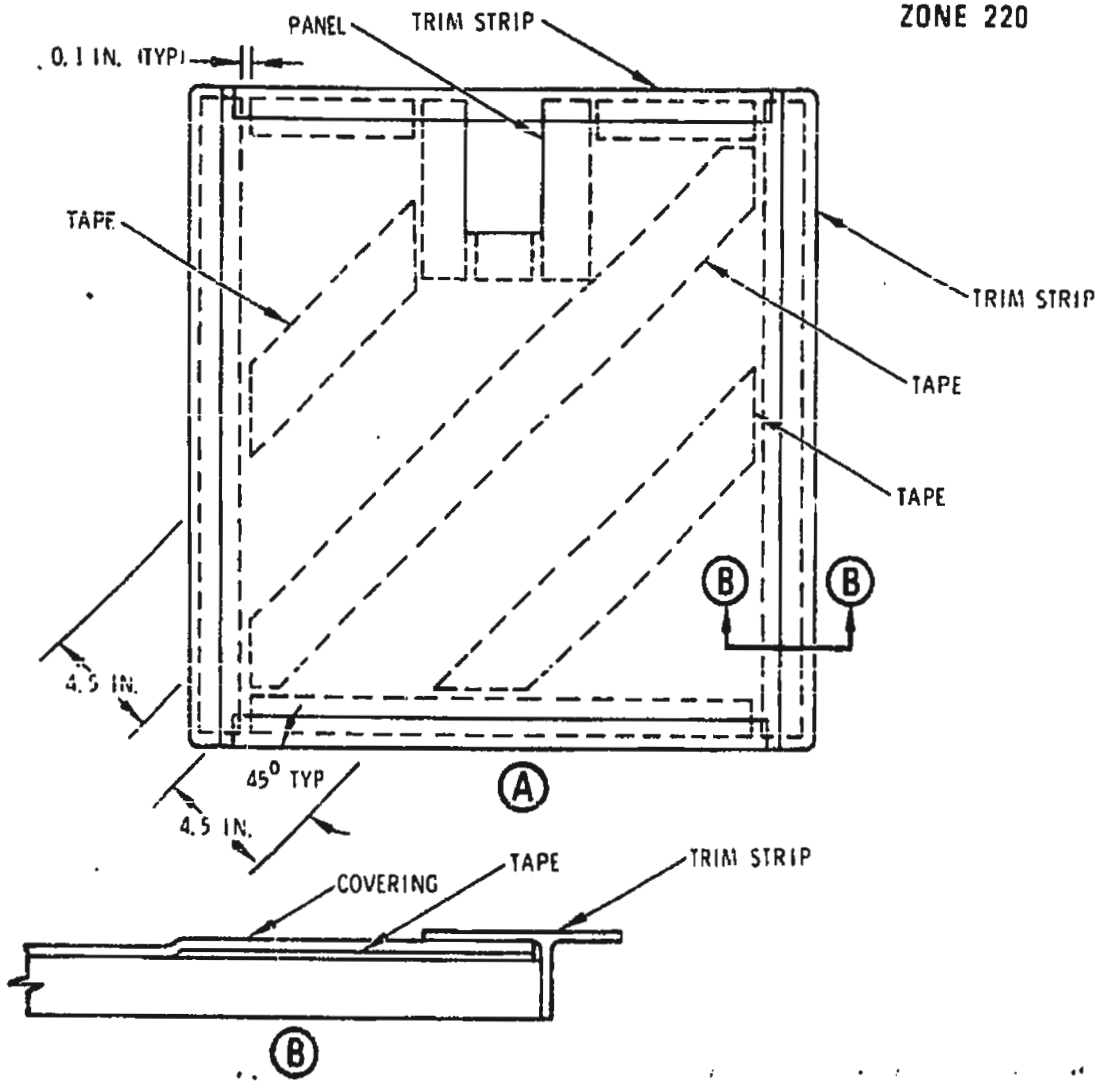
R R (1) Install double-faced tape diagonally and around edges of door panel (Ref. Fig. 401).

R (2) Position covering on door panel.

R (3) Attach trim strips to door panel with screws.



ZONE 220



HA 0480
M11-0100-52-081

R Flight Compartment Below-deck Access Door Covering
R Removal and Installation
R Figure 401

DOOR WARNING SYSTEM - DESCRIPTION AND OPERATION

1. General

The door warning system caution lights on the Flight Engineer/Second Officers annunciator panel enables him to check the status of each door. There are 17 door caution lights on the panel, zone 215. Each light is powered from the 28V dc
R essential bus (Ref. Fig. 101).

The actuating circuit continues through the indicator lights control box (Ref. 33-17-00) and the proximity switch card module (Ref. 31-22-00) to the sensors. Each sensor is installed in its door system so that its position, relative to the target, will assume a balanced circuit condition with the door closed. A door-open condition will set up an imbalance in the circuit. This provides a ground return for the 28V dc light power to illuminate the caution light.

The cargo door warning circuit can be checked with all cargo doors closed and locked by use of the test selector switch on the FE/SO AURAL WARN TEST panel.

R # DOOR WARNING SYSTEM - FAULT ISOLATION

R 1. General

R The diagrams and schematics in this section can be used for fault isolation any time a fault is reported or suspected. The PREREQUISITES listed at the top of each fault isolation diagram must be satisfied prior to starting fault isolation. Uncommon abbreviations are defined on the using fault code diagram or schematic.

R If the flight crew reports a trouble using a fault code number, the code number can be found in the Fault Isolation Reference Table in the Chapter 52 Fault Code Index. The index specifies the exact maintenance manual section, fault isolation diagram, and block number on the diagram where the fault isolation procedure should start. Schematics are included at the end of the section to supplement the fault code diagrams or as an aid in isolating a problem not covered on the diagrams.

R Refer to the Maintenance Manual Introduction for a more detailed discussion of the Fault Isolation Reporting Method (FIRM) and use of fault isolation diagrams/schematics.

R 2. Fault Isolation/Identification

R Table 101 lists the fault isolation diagrams and schematics in this section.

R Table 101

FIGURE	TITLE
101	Component Location Index
102	Component Locator Diagram
103	Passenger Entry Door Warning Light Fault Isolation
104	Cargo Door Warning Light Fault Isolation
105	Service Doors Warning Light Fault Isolation
106	Cargo Door Warning Light Intermittent
SCHEM 1	Door Warning System Electrical Schematic

COMPONENT	QTY	AREA/ACCESS	REFERENCE
CONTROL BOX, INDICATOR LIGHTS	1	FORWARD ELECTRICAL SERVICE CENTER ZONE 113	33-17-04
CONTROL BOX, PROXIMITY SWITCH	1	MID ELECTRICAL SERVICE CENTER, ZONE 137	31-22-01
SWITCH, GALLEY DOOR LATCH CLOSED	1	GALLEY DOOR, LOWER AFT SIDE, ZONE 822	52-41-10
SWITCHLIGHT, GALLEY DOOR WARNING	1	FE/SO ANNUNCIATOR PANEL, ZONE 215	20-33-01

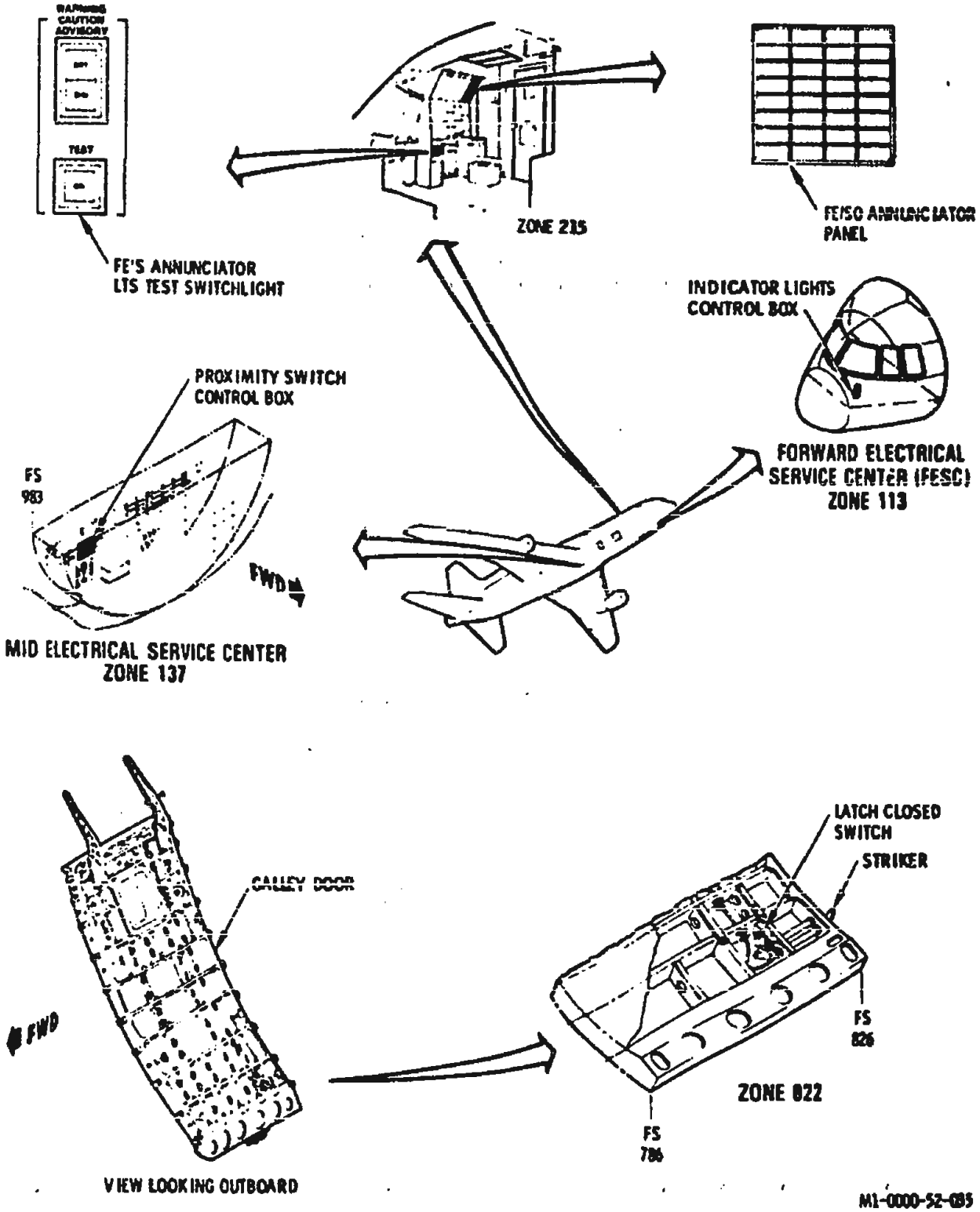
M1-0000-52-032

R
R

Component Location Index
Figure 101

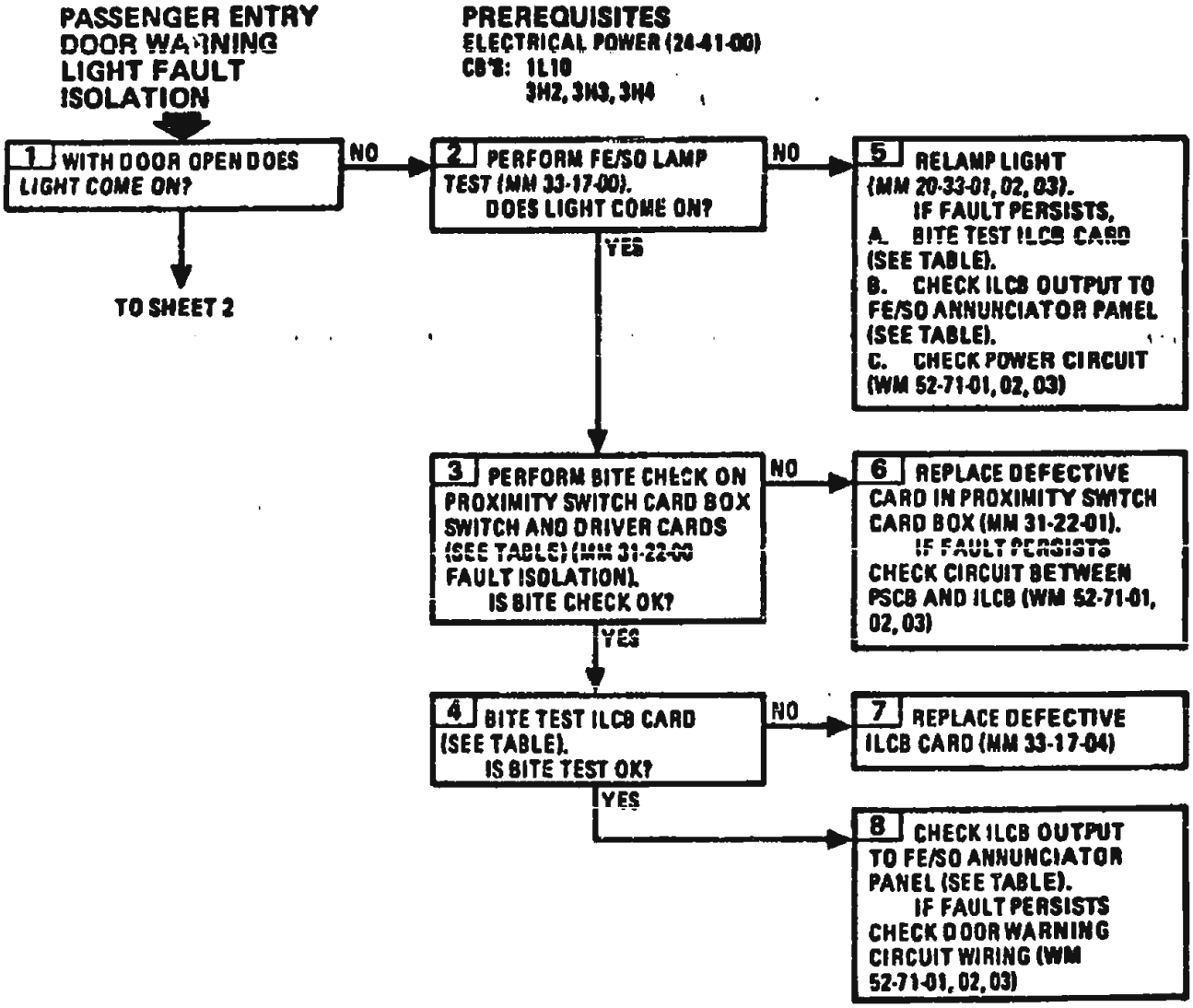
EFFECTIVITY: ALL

001B



R
R

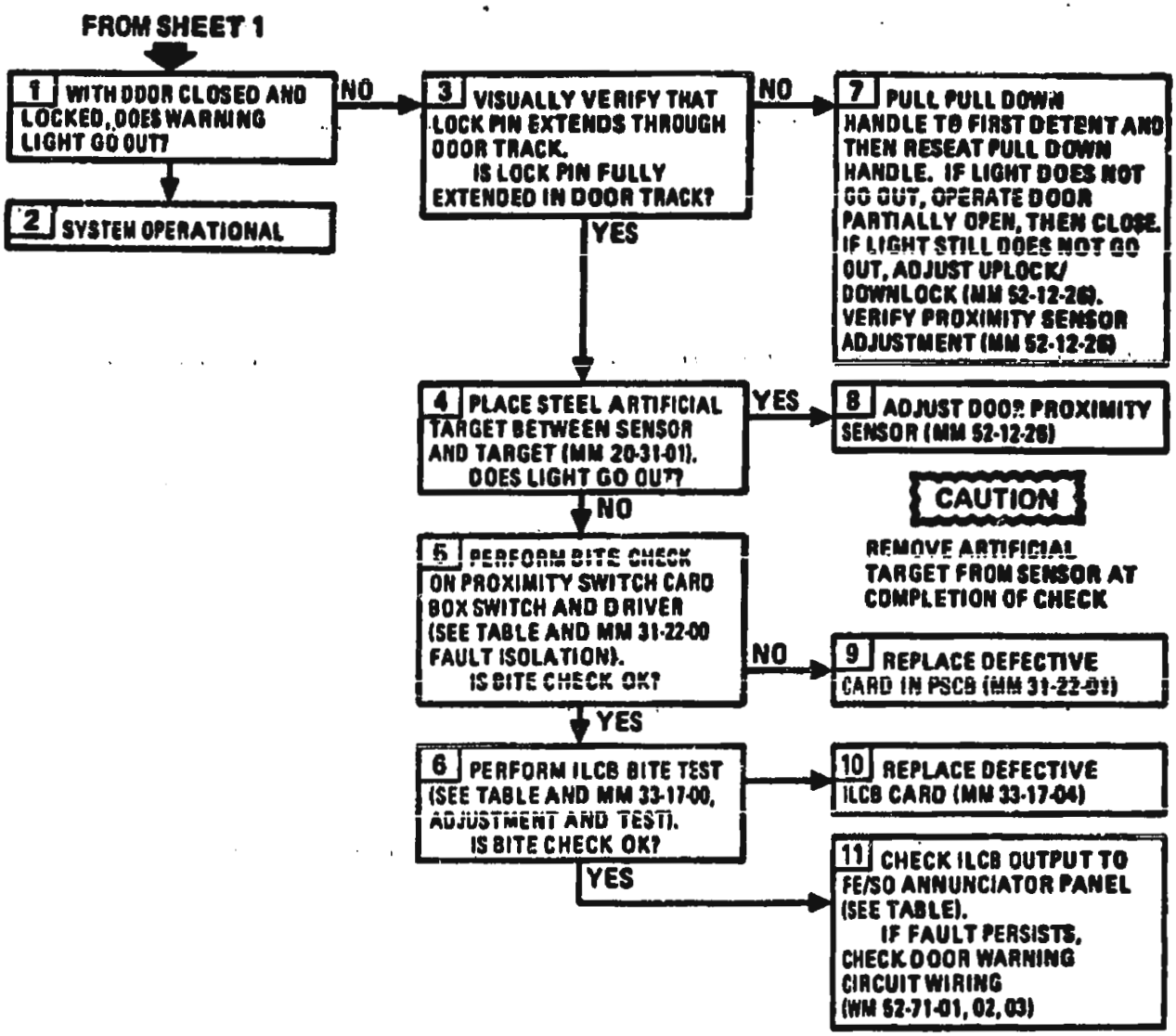
Component Locator Diagram
Figure 102


PASSENGER ENTRY DOOR WARNING LIGHT FAULT ISOLATION
PREREQUISITES
ELECTRICAL POWER (24-41-00)
CB'S: 1L10
3H2, 3H3, 3H4
1 WITH DOOR OPEN DOES LIGHT COME ON?
NO
TO SHEET 2
2 PERFORM FE/SO LAMP TEST (MM 33-17-00). DOES LIGHT COME ON?
NO
YES
5 RELAMP LIGHT (MM 20-33-01, 02, 03). IF FAULT PERSISTS, A. BITE TEST ILCB CARD (SEE TABLE). B. CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE). C. CHECK POWER CIRCUIT (WM 52-71-01, 02, 03)
3 PERFORM BITE CHECK ON PROXIMITY SWITCH CARD BOX SWITCH AND DRIVER CARDS (SEE TABLE) (MM 31-22-00 FAULT ISOLATION). IS BITE CHECK OK?
NO
YES
6 REPLACE DEFECTIVE CARD IN PROXIMITY SWITCH CARD BOX (MM 31-22-01). IF FAULT PERSISTS CHECK CIRCUIT BETWEEN PSCB AND ILCB (WM 52-71-01, 02, 03)
4 BITE TEST ILCB CARD (SEE TABLE). IS BITE TEST OK?
NO
YES
7 REPLACE DEFECTIVE ILCB CARD (MM 33-17-04)
8 CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE). IF FAULT PERSISTS CHECK DOOR WARNING CIRCUIT WIRING (WM 52-71-01, 02, 03)

ENTRY DOOR	PROX SWITCH CARD BOX		ILCB CARD	ILCB OUTPUT	
	SWITCH CARD	DRIVER CARD		CONN/PIN	SIGNAL
L1	J27	J18	1A28	P4-15	GND
L2	J27	J18	1A28	P4-16	GND
L3	J23	J20	1A22	P4-17	GND
L4	J24	J19	1A32	P13-44	GND
R1	J24	J20	1A31	P4-18	GND
R2	J28	J17	1A31	P4-19	GND
R3	J9	J3	1A31	P4-20	GND
R4	J9	J3	1A26	P13-45	GND

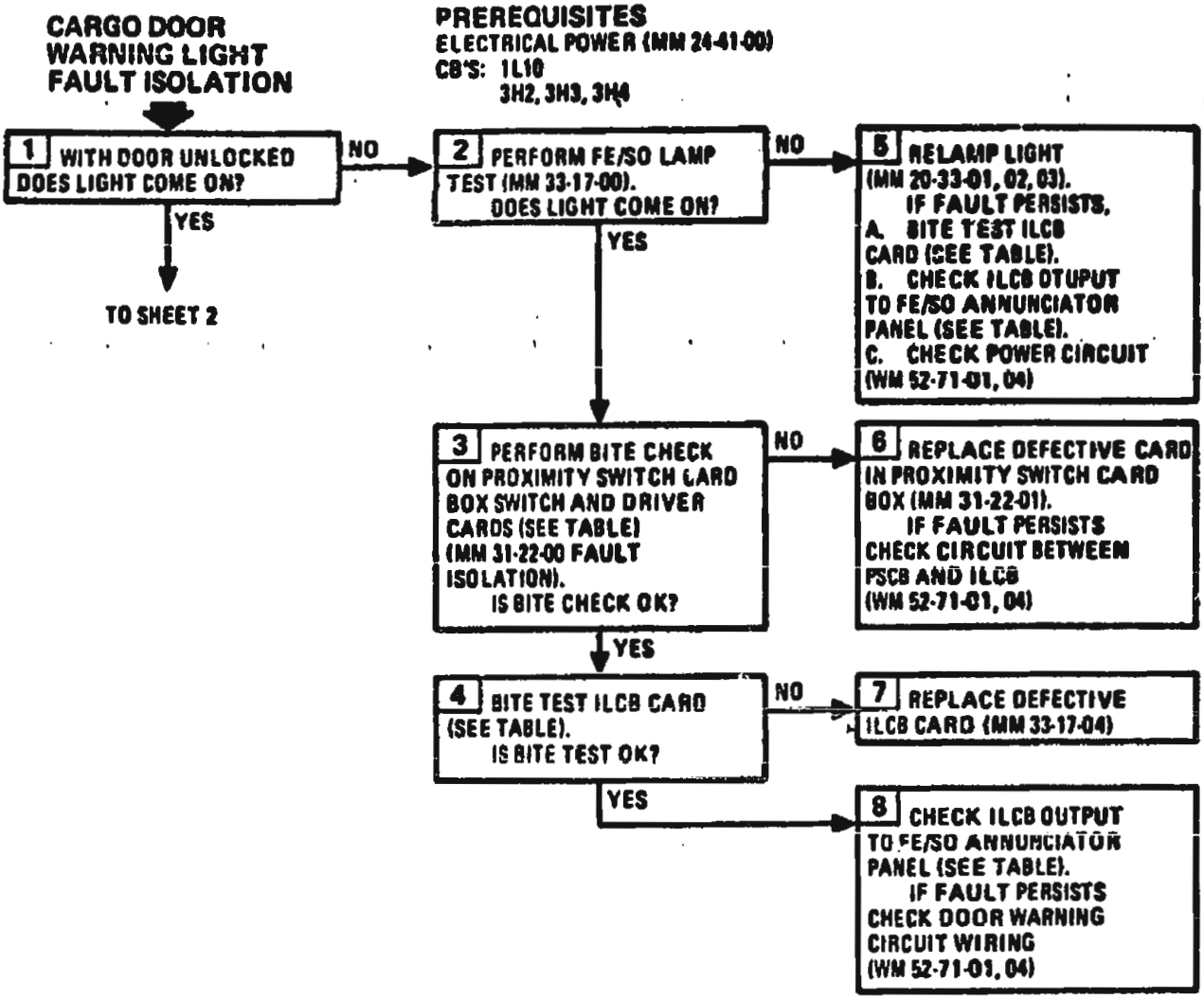
M1-0101-52-333

R R Passenger Entry Door Warning Light Fault Isolation
Figure 103 (Sheet 1)


FROM SHEET 1
1 WITH DOOR CLOSED AND LOCKED, DOES WARNING LIGHT GO OUT?
NO
2 SYSTEM OPERATIONAL
3 VISUALLY VERIFY THAT LOCK PIN EXTENDS THROUGH DOOR TRACK. IS LOCK PIN FULLY EXTENDED IN DOOR TRACK?
NO
YES
7 PULL PULL DOWN HANDLE TO FIRST DETENT AND THEN RESEAT PULL DOWN HANDLE. IF LIGHT DOES NOT GO OUT, OPERATE DOOR PARTIALLY OPEN, THEN CLOSE. IF LIGHT STILL DOES NOT GO OUT, ADJUST UPLOCK/ DOWNLOCK (MM 52-12-26). VERIFY PROXIMITY SENSOR ADJUSTMENT (MM 52-12-26)
4 PLACE STEEL ARTIFICIAL TARGET BETWEEN SENSOR AND TARGET (MM 20-31-01). DOES LIGHT GO OUT?
YES
8 ADJUST DOOR PROXIMITY SENSOR (MM 52-12-26)
NO
CAUTION
REMOVE ARTIFICIAL TARGET FROM SENSOR AT COMPLETION OF CHECK
5 PERFORM BITE CHECK ON PROXIMITY SWITCH CARD BOX SWITCH AND DRIVER (SEE TABLE AND MM 31-22-00 FAULT ISOLATION). IS BITE CHECK OK?
NO
9 REPLACE DEFECTIVE CARD IN PSCB (MM 31-22-01)
YES
6 PERFORM ILCB BITE TEST (SEE TABLE AND MM 33-17-00, ADJUSTMENT AND TEST). IS BITE CHECK OK?
10 REPLACE DEFECTIVE ILCB CARD (MM 33-17-04)
YES
11 CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE). IF FAULT PERSISTS, CHECK DOOR WARNING CIRCUIT WIRING (WM 52-71-01, 02, 03)

M1-0103-52-334

R R Passenger Entry Door Warning Light Fault Isolation
Figure 103 (Sheet 2)


CARGO DOOR WARNING LIGHT FAULT ISOLATION
PREREQUISITES
ELECTRICAL POWER (MM 24-41-00)
CB'S: 1L10
3H2, 3H3, 3H4
1 WITH DOOR UNLOCKED DOES LIGHT COME ON?
NO
YES
TO SHEET 2
2 PERFORM FE/SO LAMP TEST (MM 33-17-00). DOES LIGHT COME ON?
NO
YES
5 RELAMP LIGHT (MM 20-33-01, 02, 03). IF FAULT PERSISTS, A. BITE TEST ILCB CARD (SEE TABLE). B. CHECK ILCB OTUPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE). C. CHECK POWER CIRCUIT (WM 52-71-01, 04)
3 PERFORM BITE CHECK ON PROXIMITY SWITCH CARD BOX SWITCH AND DRIVER CARDS (SEE TABLE) (MM 31-22-00 FAULT ISOLATION). IS BITE CHECK OK?
NO
YES
6 REPLACE DEFECTIVE CARD IN PROXIMITY SWITCH CARD BOX (MM 31-22-01). IF FAULT PERSISTS CHECK CIRCUIT BETWEEN PSCB AND ILCB (WM 52-71-01, 04)
4 BITE TEST ILCB CARD (SEE TABLE). IS BITE TEST OK?
NO
YES
7 REPLACE DEFECTIVE ILCB CARD (MM 33-17-04)
8 CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE). IF FAULT PERSISTS CHECK DOOR WARNING CIRCUIT WIRING (WM 52-71-01, 04)

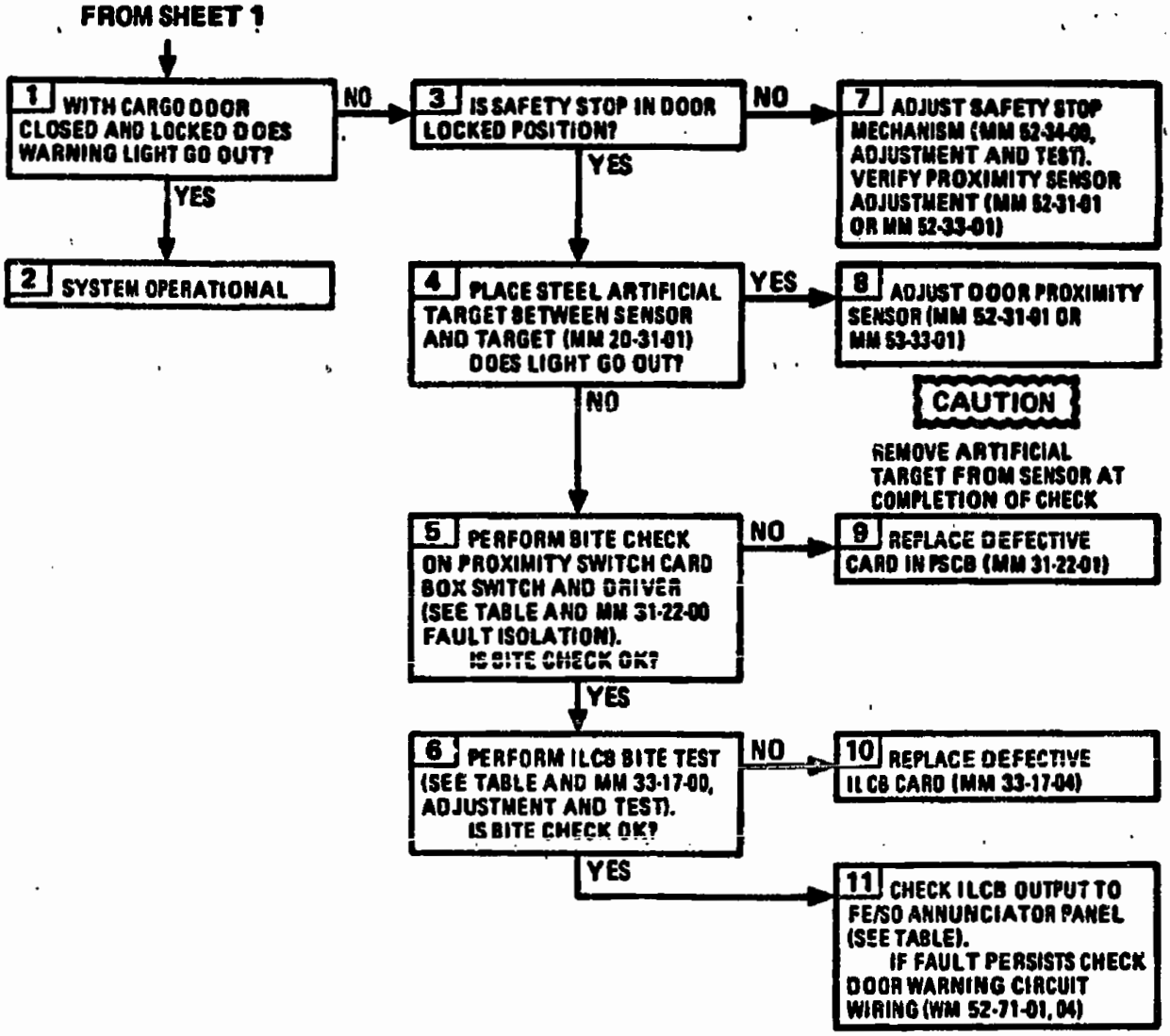
CARGO DOOR	PROX SWITCH CARD BOX		ILCB CARD	ILCB OUTPUT	
	SWITCH CARD	DRIVER CARD		CONN/PIN	SIGNAL
FWD (C-1)	J-13	J-3	1A8	P13-46	GND
CTR (C-2)	J-11	J-4	1A28	P13-47	GND
AFT (C-3)	J-11	J-4	1A8	P4-14	GND

M1-45401-52-360

R R Cargo Door Warning Light Fault Isolation
Figure 104 (Sheet 1)

EFFECTIVITY: ALL

001B


FROM SHEET 1
1 WITH CARGO DOOR CLOSED AND LOCKED DOES WARNING LIGHT GO OUT?
NO
YES
2 SYSTEM OPERATIONAL
3 IS SAFETY STOP IN DOOR LOCKED POSITION?
NO
YES
7 ADJUST SAFETY STOP MECHANISM (MM 52-34-00, ADJUSTMENT AND TEST). VERIFY PROXIMITY SENSOR ADJUSTMENT (MM 52-31-01 OR MM 52-33-01)
4 PLACE STEEL ARTIFICIAL TARGET BETWEEN SENSOR AND TARGET (MM 20-31-01) DOES LIGHT GO OUT?
YES
8 ADJUST DOOR PROXIMITY SENSOR (MM 52-31-01 OR MM 53-33-01)
CAUTION
REMOVE ARTIFICIAL TARGET FROM SENSOR AT COMPLETION OF CHECK
NO
5 PERFORM BITE CHECK ON PROXIMITY SWITCH CARD BOX SWITCH AND DRIVER (SEE TABLE AND MM 31-22-00 FAULT ISOLATION). IS BITE CHECK OK?
NO
9 REPLACE DEFECTIVE CARD IN PSCB (MM 31-22-01)
YES
6 PERFORM ILCB BITE TEST (SEE TABLE AND MM 33-17-00, ADJUSTMENT AND TEST). IS BITE CHECK OK?
NO
10 REPLACE DEFECTIVE ILCB CARD (MM 33-17-04)
YES
11 CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE). IF FAULT PERSISTS CHECK DOOR WARNING CIRCUIT WIRING (WM 52-71-01, 04)

M1-0102-52-

R Cargo Door Warning Light Fault Isolation
R Figure 104 (Sheet 2)

EFFECTIVITY: ALL

001B

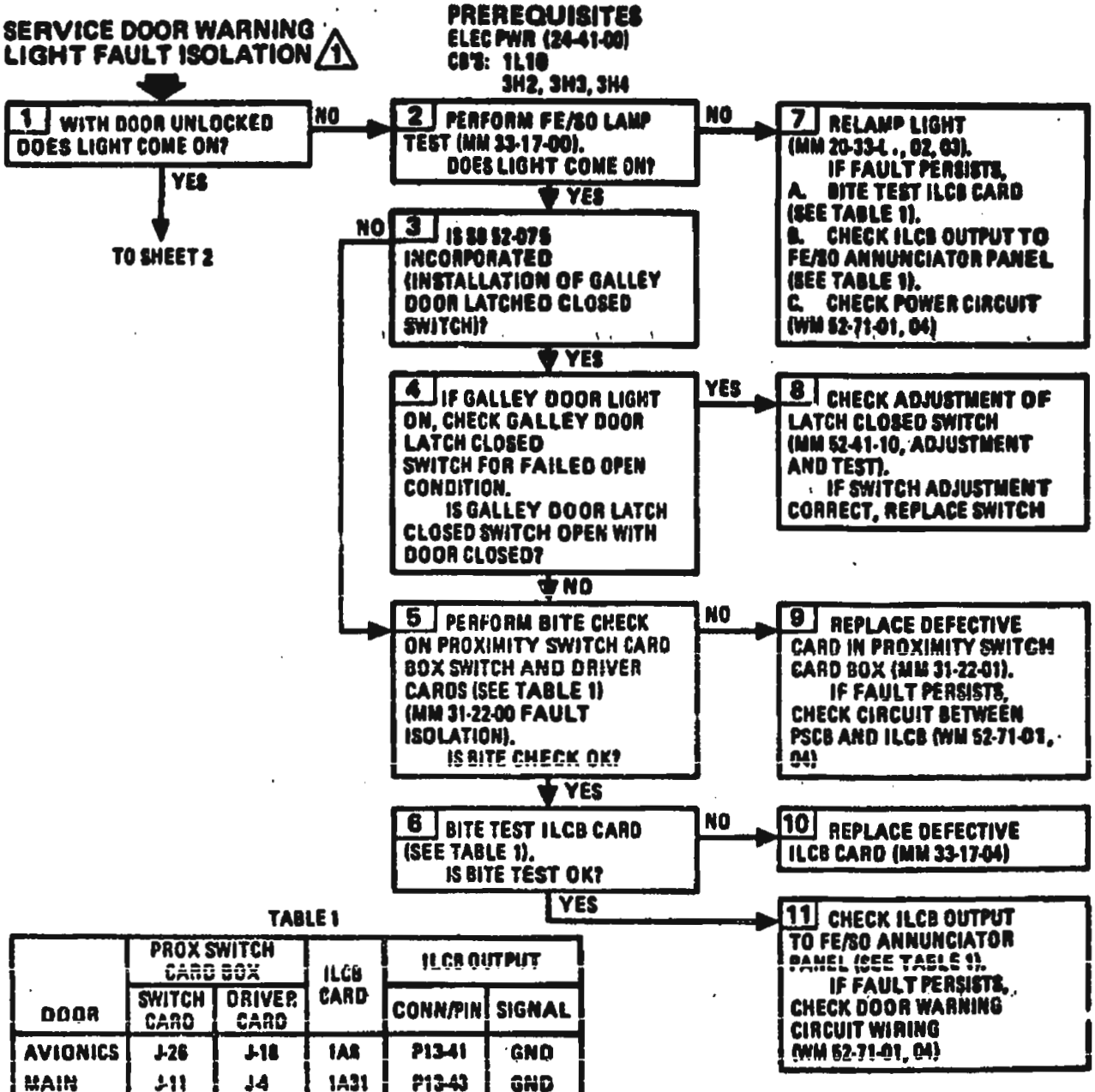

SERVICE DOOR WARNING LIGHT FAULT ISOLATION (1)
PREREQUISITES
ELEC PWR (24-41-00)
CB'S: 1L18
3H2, 3H3, 3H4
1 WITH DOOR UNLOCKED DOES LIGHT COME ON?
NO
YES
TO SHEET 2
2 PERFORM FE/SO LAMP TEST (MM 33-17-00). DOES LIGHT COME ON?
NO
YES
7 RELAMP LIGHT (MM 20-33-L., 02, 03). IF FAULT PERSISTS, A. BITE TEST ILCB CARD (SEE TABLE 1). B. CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE 1). C. CHECK POWER CIRCUIT (WM 52-71-01, 04)
3 IS SB 52-075 INCORPORATED (INSTALLATION OF GALLEY DOOR LATCHED CLOSED SWITCH)?
NO
YES
4 IF GALLEY DOOR LIGHT ON, CHECK GALLEY DOOR LATCH CLOSED SWITCH FOR FAILED OPEN CONDITION. IS GALLEY DOOR LATCH CLOSED SWITCH OPEN WITH DOOR CLOSED?
YES
8 CHECK ADJUSTMENT OF LATCH CLOSED SWITCH (MM 52-41-10, ADJUSTMENT AND TEST). IF SWITCH ADJUSTMENT CORRECT, REPLACE SWITCH
NO
5 PERFORM BITE CHECK ON PROXIMITY SWITCH CARD BOX SWITCH AND DRIVER CARDS (SEE TABLE 1) (MM 31-22-00 FAULT ISOLATION). IS BITE CHECK OK?
NO
9 REPLACE DEFECTIVE CARD IN PROXIMITY SWITCH CARD BOX (MM 31-22-01). IF FAULT PERSISTS, CHECK CIRCUIT BETWEEN PSCB AND ILCB (WM 52-71-01, 04)
YES
6 BITE TEST ILCB CARD (SEE TABLE 1). IS BITE TEST OK?
NO
10 REPLACE DEFECTIVE ILCB CARD (MM 33-17-04)
YES
11 CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE 1). IF FAULT PERSISTS, CHECK DOOR WARNING CIRCUIT WIRING (WM 52-71-01, 04)

TABLE 1

DOOR	PROX SWITCH CARD BOX		ILCB CARD	ILCB OUTPUT	
	SWITCH CARD	DRIVER CARD		CONN/PIN	SIGNAL
AVIONICS	J-26	J-18	1A8	P13-41	GND
MAIN ELEC	J-11	J-4	1A31	P13-43	GND
GALLEY	J-22	J-17	1A8	P13-42	GND
S-DUCT FWD SENSOR	J-8	J-2	1A32	P13-40	GND
S-DUCT AFT SENSOR	J-13	J-3	1A5	P2-34	GND

(1) NOTE
THIS PROCEDURE IS APPLICABLE TO THE AVIONICS (FORWARD ELECTRONIC SERVICE CENTER), GALLEY, MAIN ELEC (MID ELECTRICAL SERVICE CENTER), AND S-DUCT DOORS.
THE S-DUCT DOOR HAS TWO LATCHES, EACH WITH A SENSOR (FWD AND AFT)

M1-0001-52-000

R
R Service Doors Warning Light Fault Isolation
Figure 105 (Sheet 1)

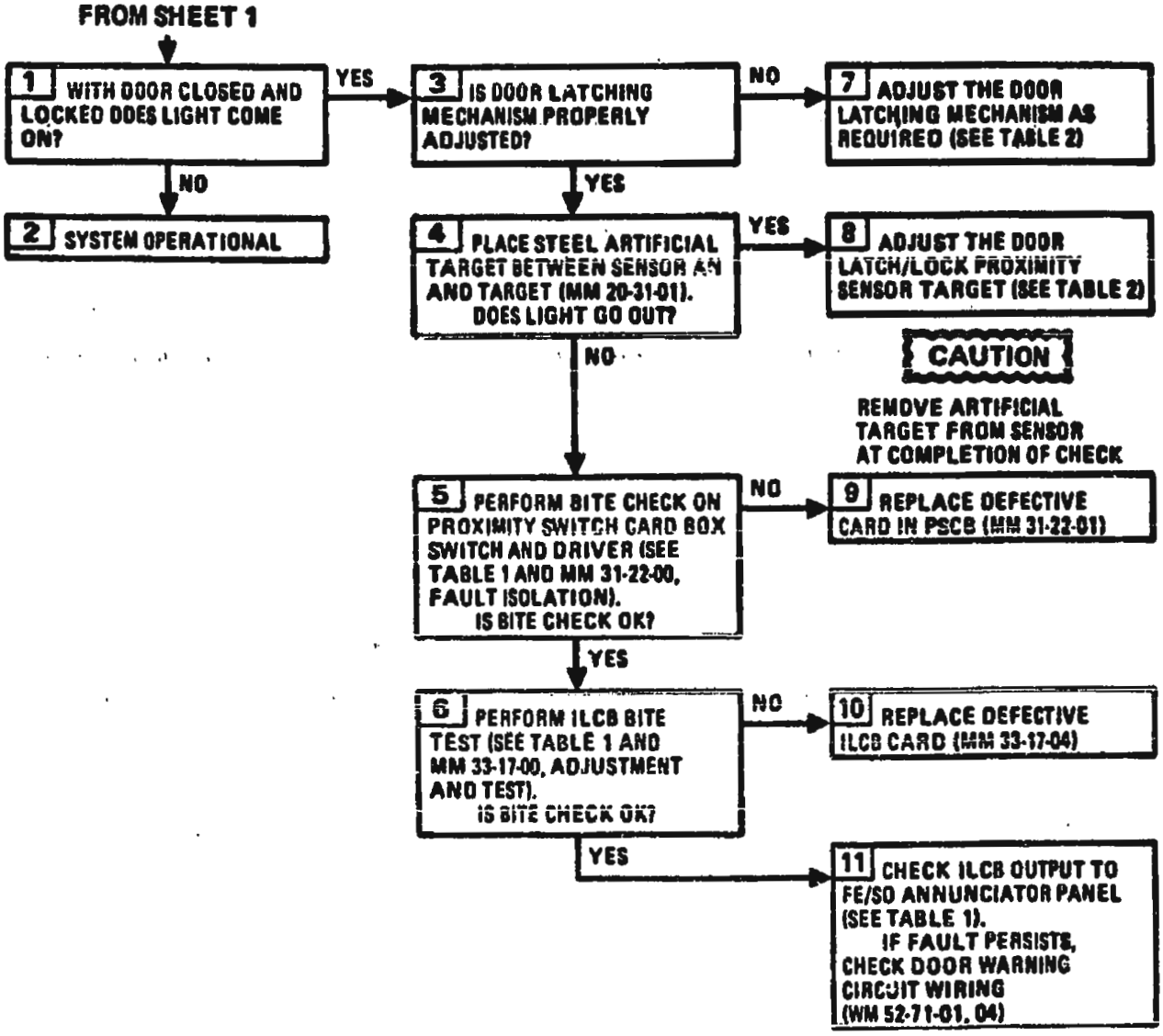

FROM SHEET 1
1 WITH DOOR CLOSED AND LOCKED DOES LIGHT COME ON?
YES
NO
2 SYSTEM OPERATIONAL
3 IS DOOR LATCHING MECHANISM PROPERLY ADJUSTED?
NO
7 ADJUST THE DOOR LATCHING MECHANISM AS REQUIRED (SEE TABLE 2)
YES
4 PLACE STEEL ARTIFICIAL TARGET BETWEEN SENSOR AN AND TARGET (MM 20-31-01). DOES LIGHT GO OUT?
YES
8 ADJUST THE DOOR LATCH/LOCK PROXIMITY SENSOR TARGET (SEE TABLE 2)
CAUTION
REMOVE ARTIFICIAL TARGET FROM SENSOR AT COMPLETION OF CHECK
NO
5 PERFORM BITE CHECK ON PROXIMITY SWITCH CARD BOX SWITCH AND DRIVER (SEE TABLE 1 AND MM 31-22-00, FAULT ISOLATION). IS BITE CHECK OK?
NO
9 REPLACE DEFECTIVE CARD IN PSCB (MM 31-22-01)
YES
6 PERFORM ILCB BITE TEST (SEE TABLE 1 AND MM 33-17-00, ADJUSTMENT AND TEST). IS BITE CHECK OK?
NO
10 REPLACE DEFECTIVE ILCB CARD (MM 33-17-04)
YES
11 CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE 1). IF FAULT PERSISTS, CHECK DOOR WARNING CIRCUIT WIRING (WM 52-71-01, 04)

TABLE 2

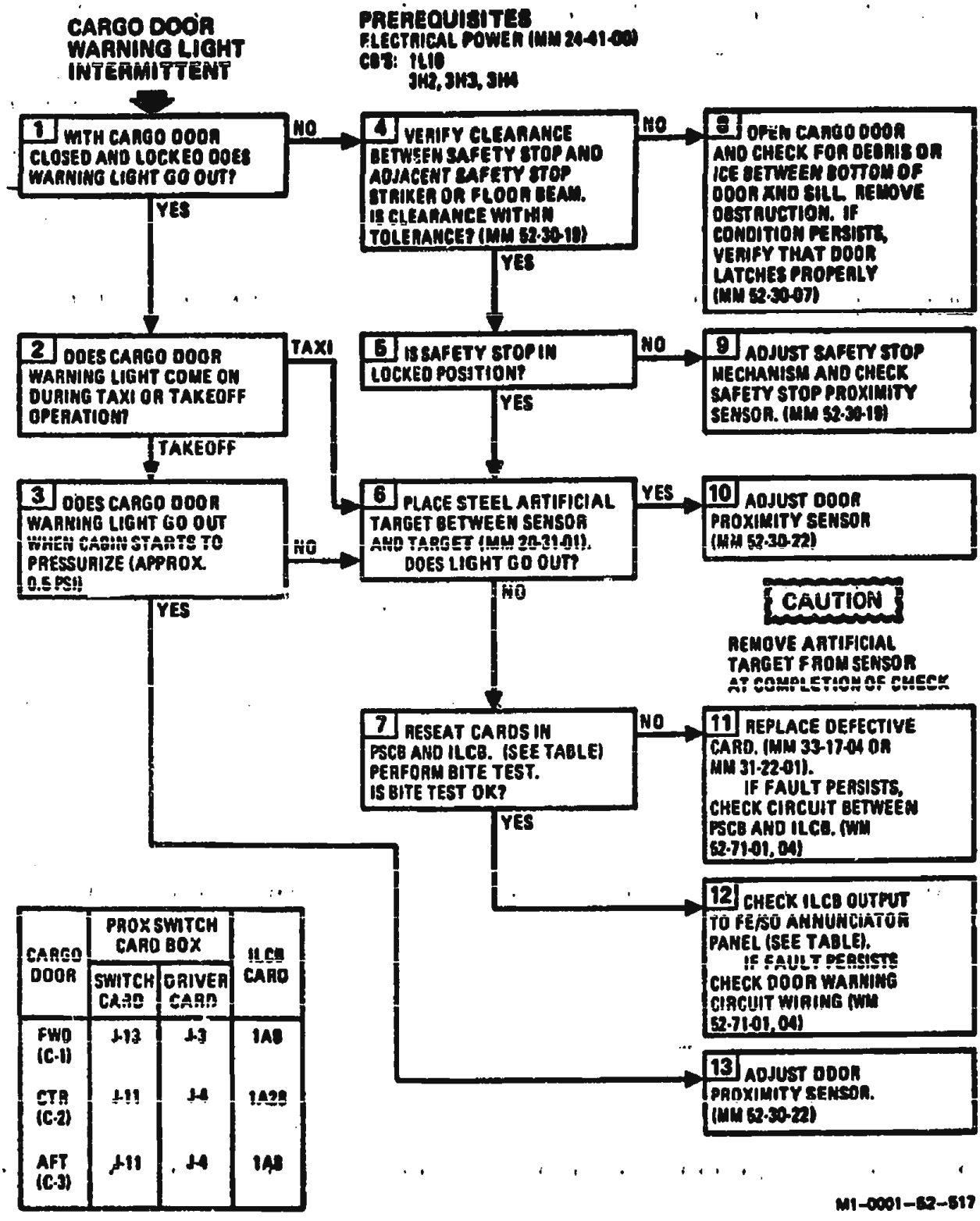
DOOR	SENSOR/TARGET ADJUSTMENT	SENSOR LOCATION
AVIONICS	52-43-01, 501	FWD OF DOOR
GALLEY	52-42-04, 501	ABOVE GALLEY DOOR
MAIN ELEC	52-43-03, 501	AFT OF DOOR
S-DUCT (TWO SENSORS)	54-26-01, 401	BOTTOM OF DOOR, S-DUCT ADAPTER, LEFT SIDE

M1-65702-52-416

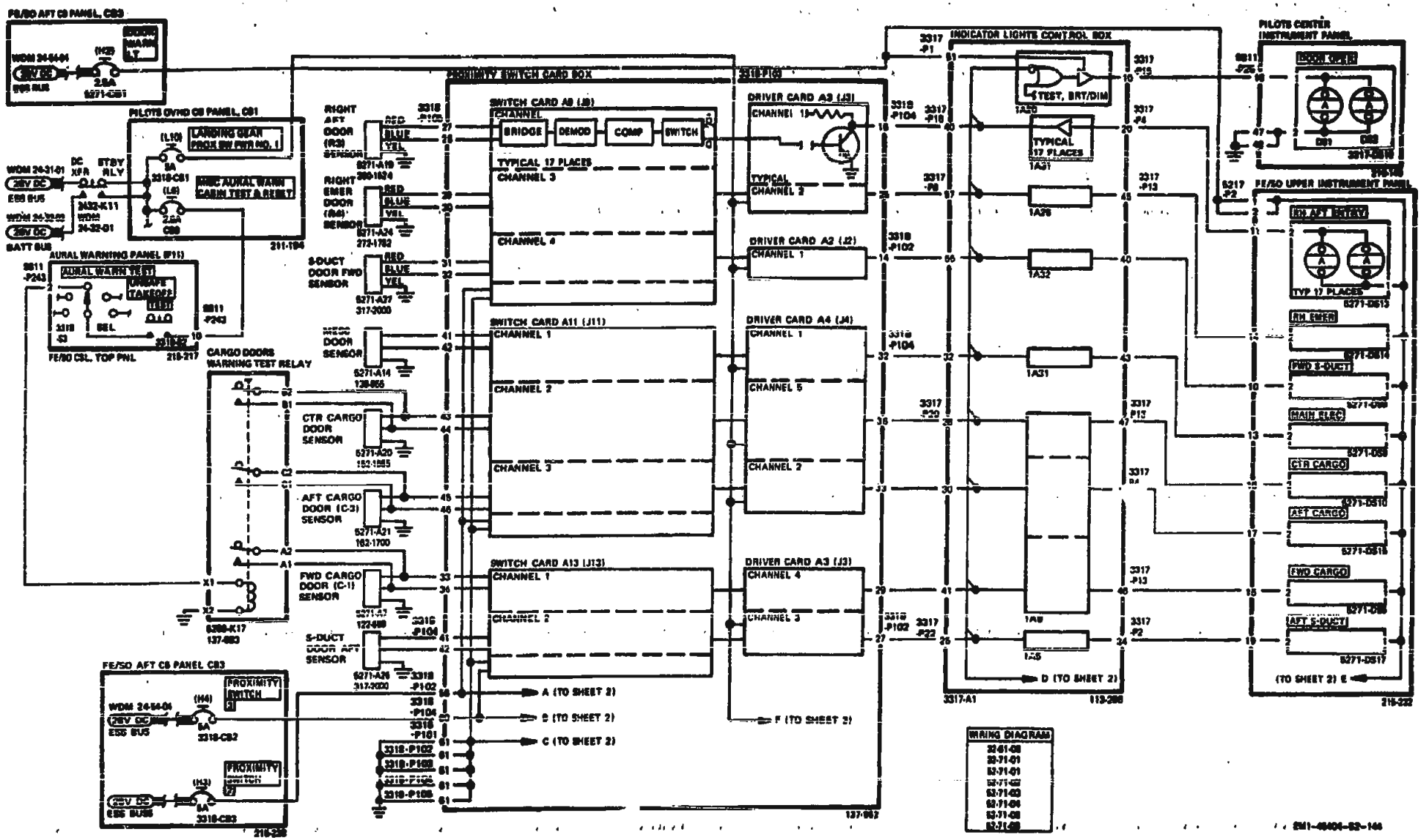
R Service Doors Warning Light Fault Isolation
R Figure 105 (Sheet 2)

EFFECTIVITY: ALL

0018


CARGO DOOR WARNING LIGHT INTERMITTENT
PREREQUISITES
ELECTRICAL POWER (MM 24-41-00)
CB'S: 1L18
3H2, 3H3, 3H4
1 WITH CARGO DOOR CLOSED AND LOCKED DOES WARNING LIGHT GO OUT?
NO
YES
2 DOES CARGO DOOR WARNING LIGHT COME ON DURING TAXI OR TAKEOFF OPERATION?
TAXI
TAKEOFF
3 DOES CARGO DOOR WARNING LIGHT GO OUT WHEN CABIN STARTS TO PRESSURIZE (APPROX. 0.5 PSI)
NO
YES
4 VERIFY CLEARANCE BETWEEN SAFETY STOP AND ADJACENT SAFETY STOP STRIKER OR FLOOR BEAM. IS CLEARANCE WITHIN TOLERANCE? (MM 52-30-19)
NO
YES
5 IS SAFETY STOP IN LOCKED POSITION?
NO
YES
6 PLACE STEEL ARTIFICIAL TARGET BETWEEN SENSOR AND TARGET (MM 20-31-01). DOES LIGHT GO OUT?
YES
NO
7 RESEAT CARDS IN PSCB AND ILCB. (SEE TABLE) PERFORM BITE TEST. IS BITE TEST OK?
NO
YES
8 OPEN CARGO DOOR AND CHECK FOR DEBRIS OR ICE BETWEEN BOTTOM OF DOOR AND SILL. REMOVE OBSTRUCTION. IF CONDITION PERSISTS, VERIFY THAT DOOR LATCHES PROPERLY (MM 52-30-07)
9 ADJUST SAFETY STOP MECHANISM AND CHECK SAFETY STOP PROXIMITY SENSOR. (MM 52-30-19)
10 ADJUST DOOR PROXIMITY SENSOR (MM 52-30-22)
CAUTION
REMOVE ARTIFICIAL TARGET FROM SENSOR AT COMPLETION OF CHECK
11 REPLACE DEFECTIVE CARD. (MM 33-17-04 OR MM 31-22-01).
IF FAULT PERSISTS, CHECK CIRCUIT BETWEEN PSCB AND ILCB. (WM 52-71-01, 04)
12 CHECK ILCB OUTPUT TO FE/SO ANNUNCIATOR PANEL (SEE TABLE).
IF FAULT PERSISTS CHECK DOOR WARNING CIRCUIT WIRING (WM 52-71-01, 04)
13 ADJUST DOOR PROXIMITY SENSOR. (MM 52-30-22)
CARGO DOOR
PROX SWITCH CARD BOX
SWITCH CARD
DRIVER CARD
ILCB CARD
FWD (C-1) J-13 J-3 1A8
CTR (C-2) J-11 J-4 1A28
AFT (C-3) J-11 J-4 1A8
M1-0001-52-517

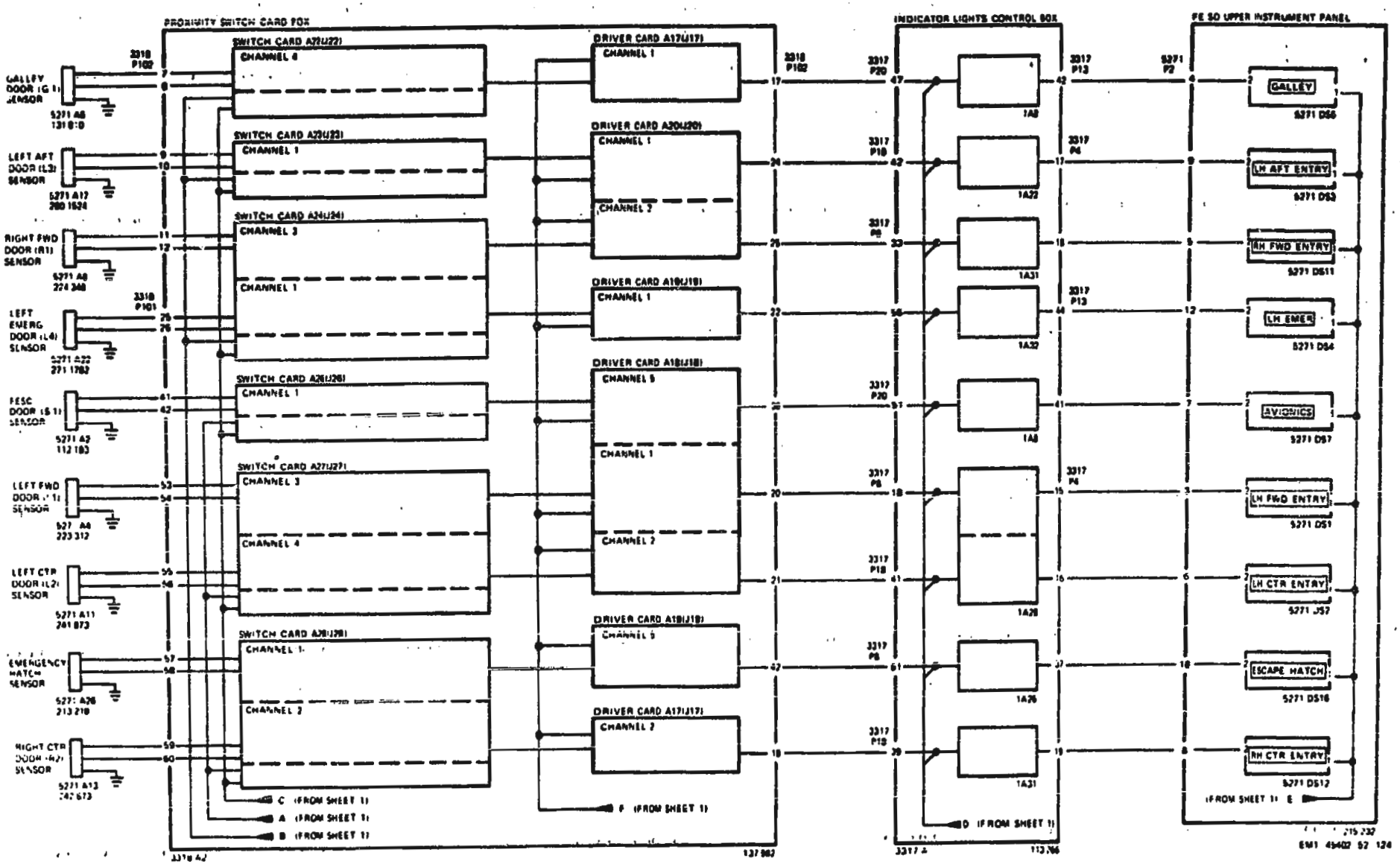
R Cargo Door Warning Light Intermittent
R Figure 106


FE/SO AFT CB PANEL, CB3
PILOTS OVHD CB PANEL, CB1
AURAL WARNING PANEL (P11)
FE/SO CSL, TOP PNL
CARGO DOORS WARNING TEST RELAY
PROXIMITY SWITCH CARD BOX
SWITCH CARD A9 (J9)
SWITCH CARD A11 (J11)
SWITCH CARD A13 (J13)
DRIVER CARD A3 (J3)
DRIVER CARD A2 (J2)
DRIVER CARD A4 (J4)
DRIVER CARD A3 (J3)
INDICATOR LIGHTS CONTROL BOX
PILOTS CENTER INSTRUMENT PANEL
FE/SO UPPER INSTRUMENT PANEL
RIGHT AFT DOOR (R3) SENSOR
RIGHT EMER DOOR (R4) SENSOR
S-DUCT DOOR FWD SENSOR
DOOR SENSOR
CTR CARGO DOOR SENSOR
AFT CARGO DOOR (C-3) SENSOR
FWD CARGO DOOR (C-1) SENSOR
S-DUCT DOOR AFT SENSOR
PROXIMITY SWITCH
WIRING DIAGRAM

R Door Warning System Electrical Schematic
R SCHEM 1 (Sheet 1)

EFFECTIVITY: ALL

001B

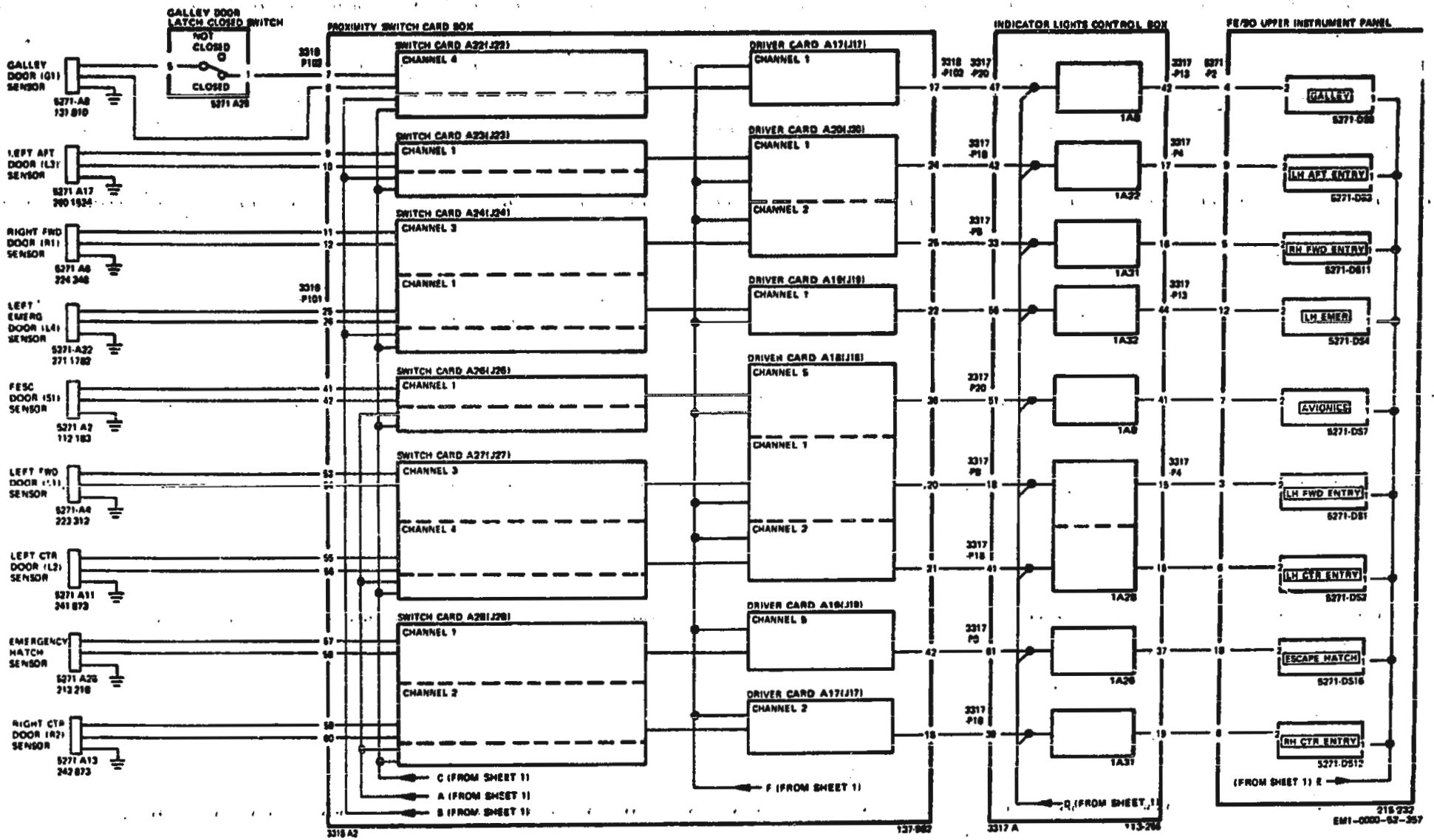


R
R

Door Warning System Electrical Schematic
SCHEM 1 (Sheet 2)

EFFECTIVITY: 001-031 WITHOUT SB52-075

001B



R Door Warning System Electrical Schematic
R SCHEM 1 (Sheet 2)

EFFECTIVITY: 001-031 WITH SB52-075 AND 032-999

001B

DOOR WARNING SYSTEM - MAINTENANCE PRACTICES

1. Maintenance Practices

A. General

When cargo door warning lights are inoperative, visually inspect to verify that affected door is closed, latched, and locked. To deactivate the door, refer to 52-54-00, 201, Paragraphs 1A and 3C.

NOTE: This deactivation procedure applies only when an aircraft is to be dispatched in accordance with the MEL.

R R (1) Deactivation Reference for C1A cargo doors 52-36-00,201 paragraph 5A.

R R (2) Deactivation Reference for passenger doors which also covers cabin doors 52-12-00,201 paragraph 3.A.

DOOR WARNING SYSTEM - ADJUSTMENT AND TEST

1. General

These procedures outline the steps to be performed to verify operation of the door warning system.

2. Referenced Procedures

23-43-00	Service Interphone System - Maintenance Practices
24-41-00	External Power/Ground Service System - Maintenance Practices
33-17-00	Annunciator System - Adjustment and Test

3. Adjustment/Test

A. Preparation for Test

(1) Turn on electrical power (Ref. 24-41-00).

(2) Establish interphone communication between Flight Engineer/Second Officers flight station and the areas where door proximity switches are to be checked.

(3) On pilots overhead circuit breaker panel CB1, zone 210, verify that circuit breakers LANDING GEAR - PROX SW PWR - NO. 1 (L10), and LANDING GEAR - PROX SW PWR - NO. 4 (L11), and MISC - AURAL WARN - TEST & RESET (L6), are closed.

On Flight Engineer/Second Officers overhead circuit breaker panel CB2, zone 215, verify that circuit breaker GROUND SERVICE - MLG - GND - SENSE (L8), is closed.

On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, verify that circuit breakers PROXIMITY SWITCH - 2 (H3), PROXIMITY SWITCH -3 (H4), and DOOR - WARN LTS (H2), are closed.

(4) On galley left circuit breaker panel, zone 131, verify all PASS ACTUATOR and CONTROL, and CARGO DOOR ACTUATOR and CONTROL circuit breakers are closed.

CR CR (5) Verify operation of annunciator system (Ref. 33-17-00, Page Block 500).

B. Door Warning System Operation Check

R (1) Close and lock all doors (Ref. Table 501).

(2) With all doors closed and locked, the DOOR OPEN light on the pilots caution and warning annunciator lights panel, and all lights listed in Table 501, should be off.

NOTE: If any of the referenced lights fail to turn off with the associated door locked, adjust door warning system sensor and target alignment according to given reference.

R CAUTION: IF MANUAL MODE IS USED TO UNLOCK THE PASSENGER DOORS, DO NOT PULL THE HANDLE BEYOND THE FIRST DETENT. PULLING THE HANDLE TO THE SECOND DETENT WILL OPEN THE DOOR ON THE EMERGENCY SYSTEM AND WILL DEPLOY THE EMERGENCY EVACUATION SLIDE IF THE EVACUATION SLIDE LEVER IS IN THE ENGAGE POSITION.

(3) Verify operation of passenger door warning systems as follows:

(a) At each door to be tested, place evacuation slide selector lever in DETACH position.

(b) At one door at a time, electrically or manually unlock and then relock the door. Verify that pilots DOOR OPEN and associated FE/SO annunciator lights come on while each door is unlocked and go off when door is locked.

NOTE: The doors need not be opened, only unlocked.

(c) The DOOR OPEN annunciator light must flash for approximately 10 seconds, then come on steady each time test is repeated.

(d) Verify that each door is locked at completion of test.

(e) If annunciator light fails to turn off when door is locked, check adjustment of door warning system sensor and target (Ref. Table 501).

(4) Verify operation of emergency doors (L/R 4) as described in Step (3).

NOTE: Emergency doors operate in manual mode only.

(5) Verify operation of galley (G-1), forward service center (S-1), mid-electrical service center (S-2), S-duct, and escape hatch door warning systems as follows:

(a) At one door at a time, unlock and relock the door. Verify that pilots DOOR OPEN and associated FE/SO annunciator lights come on while each door is unlocked and go off when door is locked.

NOTE: The S-duct has two warning lights, one for each latch. Check by operating a single latch at a time (respective warning light must be on) and then both latches together (both lights on).

(b) The DOOR OPEN annunciator light must flash for approximately 10 seconds, then come on steady each time test is repeated.

(c) If annunciator lights fail to turn off when door is locked, check adjustment of door warning system sensor and target (Ref. Table 501). R

(d) Verify that each door is locked at completion of test.

(6) Verify operation of cargo door warning systems as follows:

(a) At one door at a time, electrically or manually unlock and then relock the door. Verify that pilots DOOR OPEN and associated FE/SO annunciator lights come on while each door is unlocked and go off when door is locked.

(b) Door OPEN annunciator light must flash for approximately 10 seconds and then come on steady each time test is repeated .

(7) Check cargo doors warning pretakeoff test circuit (Ref. Para. 3C).

(8) Turn off electrical power (Ref. 24-41-00).

(9) Stow interphone equipment, if used.

C. Cargo Doors Warning Pretakeoff Test Circuit Check

(1) Turn on electrical power (Ref. 24-41-00).

(2) Verify that circuit breakers closed in Step 3A(3) are closed.

(3) Verify that all cargo doors are closed and locked.

NOTE: The FE/SO annunciator panel lights for all the cargo doors should be off

(4) On FE/SO AURAL WARN TEST PANEL set selector to UNSAFE TAKEOFF.

(5) Depress TEST switch on AURAL WARN TEST panel. The FE/SO annunciator panel cargo door lights must turn on while TEST switch is depressed, and turn off when switch is released. DOOR OPEN light on pilots caution and warning lights panel should flash for 10 seconds then remain on.

(6) Turn off electrical power (Ref. 24-41-00).

D. Galley Door Warning Circuit Periodic Check (Aircraft 001-031 With SB52-075 And 032-999)

This check is used to detect a passive failure of the galley door proximity sensor or galley door latch closed switch.

(1) Turn on electrical power (Ref. Para. 3A).

(2) Unlock galley door and stow in full open position. Verify that GALLEY warning light on FE/SO annunciator panel is on.

(3) Actuate galley door latch closed switch (at lower aft side of door). Verify that GALLEY warning light remains on. Release switch.

(4) While holding torque tube interlock panel down (above door at forward hinge), move inside handle to LOCK position. Verify that GALLEY warning light ON FE/SO panel remains on.

(5) With inside handle in the LOCK position, actuate galley door latch closed switch. Verify that GALLEY door warning light on FE/SO panel goes out. Unlock handle and release latch closed switch.

(6) Close and lock galley door, verify that GALLEY door warning light goes out.

(7) Turn off electrical power.

Door Warning System Proximity Sensor Location
Table 501

	DOOR	ZONE	SENSOR LOCATION	FLIGHT ENGINEER SECOND OFFICERS ANNUNCIATOR PANEL LIGHT	SENSOR/TARGET ADJUSTMENT
	LEFT FWD L1	832	AFT OF UPPER AFT SIDE OF DOOR BY UPLOCK/DOWNLOCK SOLENOID	LH FWD ENTRY	52-12-26, 501
	RIGHT FWD R1	842	AFT OF UPPER AFT SIDE OF DOOR BY UPLOCK/DOWNLOCK SOLENOID	RH FWD ENTRY	52-12-26, 501
	LEFT CTR L2	833	AFT OF UPPER AFT SIDE OF DOOR BY UPLOCK/DOWNLOCK SOLENOID	LH CTR ENTRY	52-12-26, 501
	RIGHT CTR R2	843	AFT OF UPPER AFT SIDE OF DOOR BY UPLOCK/DOWNLOCK SOLENOID	RH CTR ENTRY	52-12-26, 501
	LEFT AFT L3	834	AFT OF UPPER AFT SIDE OF DOOR BY UPLOCK/DOWNLOCK SOLENOID	LH AFT ENTRY	52-12-26, 501
	RIGHT AFT R3	844	AFT OF UPPER AFT SIDE OF DOOR BY UPLOCK/DOWNLOCK SOLENOID	RH AFT ENTRY	52-12-26, 501
CR	LEFT EMERG. L4	835	AFT OF UPPER AFT SIDE OF DOOR BY UPLOCK/DOWNLOCK SOLENOID	LH EMER	52-22-10, 501
CR	RIGHT EMERG. R4	845	AFT OF UPPER AFT SIDE OF DOOR BY UPLOCK/DOWNLOCK SOLENOID	RH EMER	52-22-10, 501

Door Warning System Proximity Sensor Location (Cont)
Table 501

	DOOR	ZONE	SENSOR LOCATION	FLIGHT ENGINEER SECOND OFFICERS ANNUNCIATOR PANEL LIGHT	SENSOR/TARGET ADJUSTMENT
	GALLEY DOOR G-1	822	ABOVE GALLEY DOOR FORWARD OF EXTERIOR HANDLE HOUSING	GALLEY	52-42-04, 501
	FWD SERV CTR (S-1)	112	FORWARD OF DOOR	AVIONICS	52-43-01, 401
	MID ELEC SERV CTR (S-2)	137	AFT SIDE OF DOOR	MAIN ELEC	52-43-03, 501
	ESCAPE HATCH	831	ON FRAME, FORWARD OF DOOR	ESCAPE HATCH	52-23-01, 501
CR CR CR	FWD CARGO DOOR C-1	821	ABOVE CARGO DOOR WITH SAFETY STOP	FWD CARGO	52-30-19, 501 PARA. 4.D.
CR CR CR	CTR CARGO DOOR C-2	823	ABOVE CARGO DOOR WITH SAFETY STOP	CTR CARGO	52-30-19, 501 PARA. 4.D.
CR CR	AFT CARGO DOOR C-3	824	ABOVE CARGO DOOR WITH SAFETY STOP	AFT CARGO	52-30-19, 501 PARA. 4.D.
	S-DUCT DOOR	431	TWO PROXIMITY SENSORS AT BOTTOM OF DOOR, S-DUCT ADAPTER, LEFT SIDE	FWD S-DUCT AFT S-DUCT	54-26-01, 401

DOOR PROXIMITY SENSORS - REMOVAL AND INSTALLATION

1. General

This procedure outlines the steps required to remove and replace a door proximity sensor (switch).

Proximity sensors may vary slightly in size or configuration in some applications, but removal and installation procedures are essentially the same.

Methods of adjustment and clearances between sensors and related targets differ depending on the mode of closing and locking of each type of door. The location of proximity sensor adjustment procedures for each door can be found by referring to 52-71-00, Table 501.

2. Referenced Procedure

52-71-00 Door Warning System - Adjustment and Test

3. Removal/Installation

A. Removal

(1) On Flight Engineer/Second Officers aft circuit breaker panel CB3, zone 215, open and tag circuit breakers PROXIMITY SWITCH-2 (H3), and PROXIMITY SWITCH-3 (H4).

R (2) Gain access to proximity sensor (Ref. 52-71-00, Table
R 501).

(3) Remove proximity sensor as follows:

(a) Identify sensor wire lugs for wire color, and location on terminal board, then disconnect lugs. On the S-duct proximity sensors, disconnect electrical connectors.

(b) Attach pull-wire to wire lugs, if required.

(c) Disconnect conduit connector from sensor, where applicable.

NOTE: Protective conduit is used in areas subject to moisture or contamination.

(d) Remove sensor attaching hardware and retain for reinstallation.

(e) Remove sensor, and where applicable, pull wire leads from conduit, leaving pull-wire in conduit.

B. Installation

R (1) Verify that circuit breakers [Ref. Step 3A(1)] are open and tagged.

(2) Install proximity sensor as follows:

(a) On installation with conduit, attach pull-wire to sensor and pull sensor wire leads through to terminal board.

(b) Install proximity switch using attaching hardware.

(c) Install proximity sensor wire lugs on terminal board terminals as identified in Step 3A(3)(a) (or install connector, if applicable).

(d) Where applicable, connect conduit connector to sensor.

(3) Adjust proximity sensor. (Refer to 52-71-00, Table 501 for location of adjustment procedure.)

(4) Perform door warning system operational check on the door system affected (Ref. 52-71-00).

(5) Close access panels and/or trim as required.

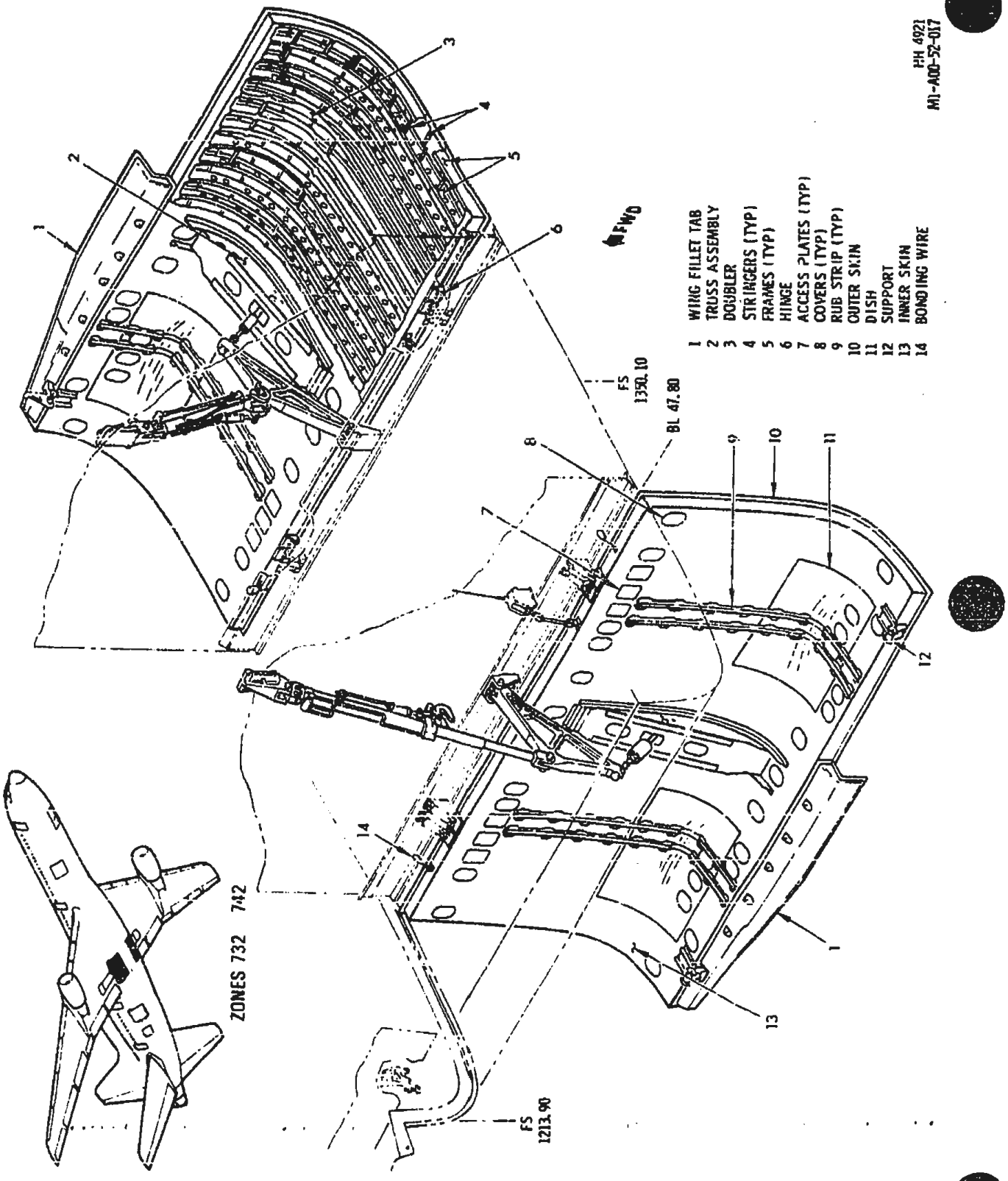
(6) Verify that circuit breakers opened for this procedure are closed and tags removed.

MAIN LANDING GEAR DOORS - DESCRIPTION AND OPERATION

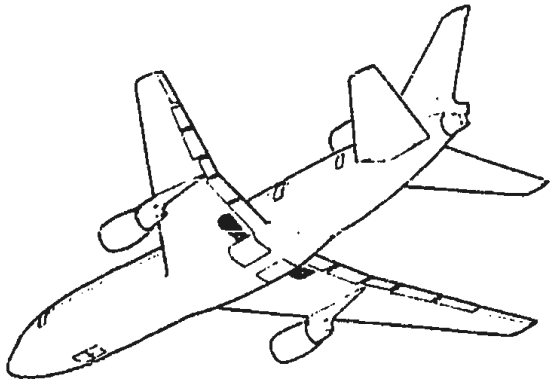
1. General

The main landing gear (MLG) doors consist of three separate panels: the fixed MLG door in two panels (Ref. Fig. 1), and the hinged MLG door panel (Ref. Fig. 2).

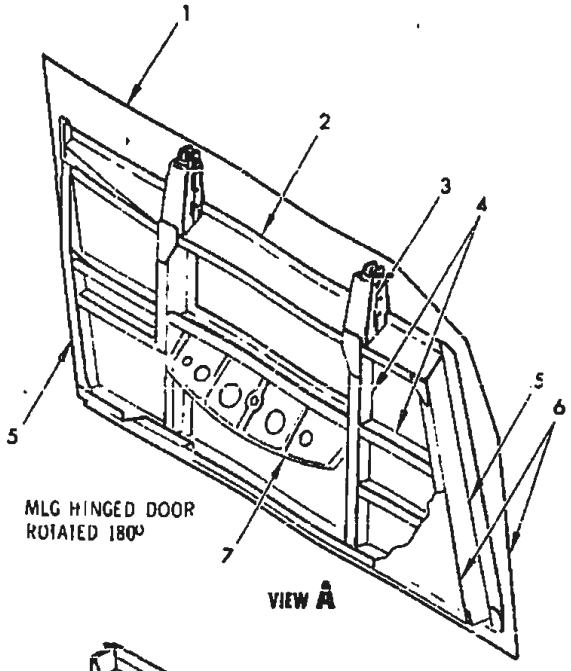
The fixed door lower panel is attached to the outboard side of the shock strut. The upper fixed door panel, which is hinged to the wing along its upper edge, is linked to the shock strut with a pin connection. The door is actuated by strut movement. The lower edge of the hinged upper panel seals against the upper edge of the fixed panel with the landing gear retracted.

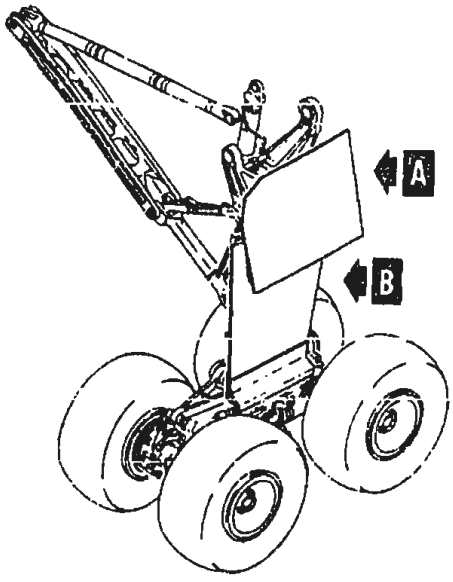


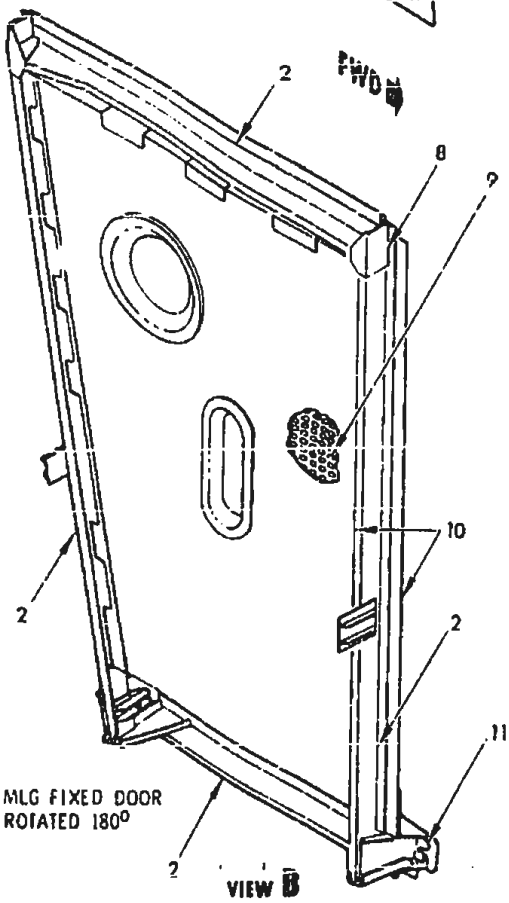
Main Landing Gear Inboard Doors
Figure 1



ZONE 733 743 734 744







1	HINGE FITTING	7	STRUT ATTACH BEAM
2	BEAM	8	CORNER FITTING
3	ROLLER FITTING	9	HONEYCOMB CORE
4	STIFFENERS (TYP)	10	FIBERGLASS
5	EDGE MEMBER	11	BRACKET
6	INNER & OUTER SKINS		

HH 4920
A11-A00-52-018

Main Landing Gear Fixed and Hinged Doors
Figure 2

CR

MAIN LANDING GEAR DOORS - INSPECTION/CHECK

CR 1. Main Landing Gear (MLG) Door Check Following Gear-Down Flight

CR A. TWA recently experienced an in-flight loss of both the hinged and fixed doors from the right-hand MLG of an L-1011 aircraft. Other operators have reported similar losses.

CR B. To ensure the integrity of the doors, the following visual inspection can be performed on termination of a gear-down flight leg (this procedure is for your information and will be incorporated into an M139 form):

CR NOTE: Strip finish and verify apparent cracks in paint using dye penetrant.

CR (1) Make a close inspection of the critical attach points shown in Figure 501, paying particular attention to edges and inside corners of flanged supports and fittings attaching doors to the MLG strut.

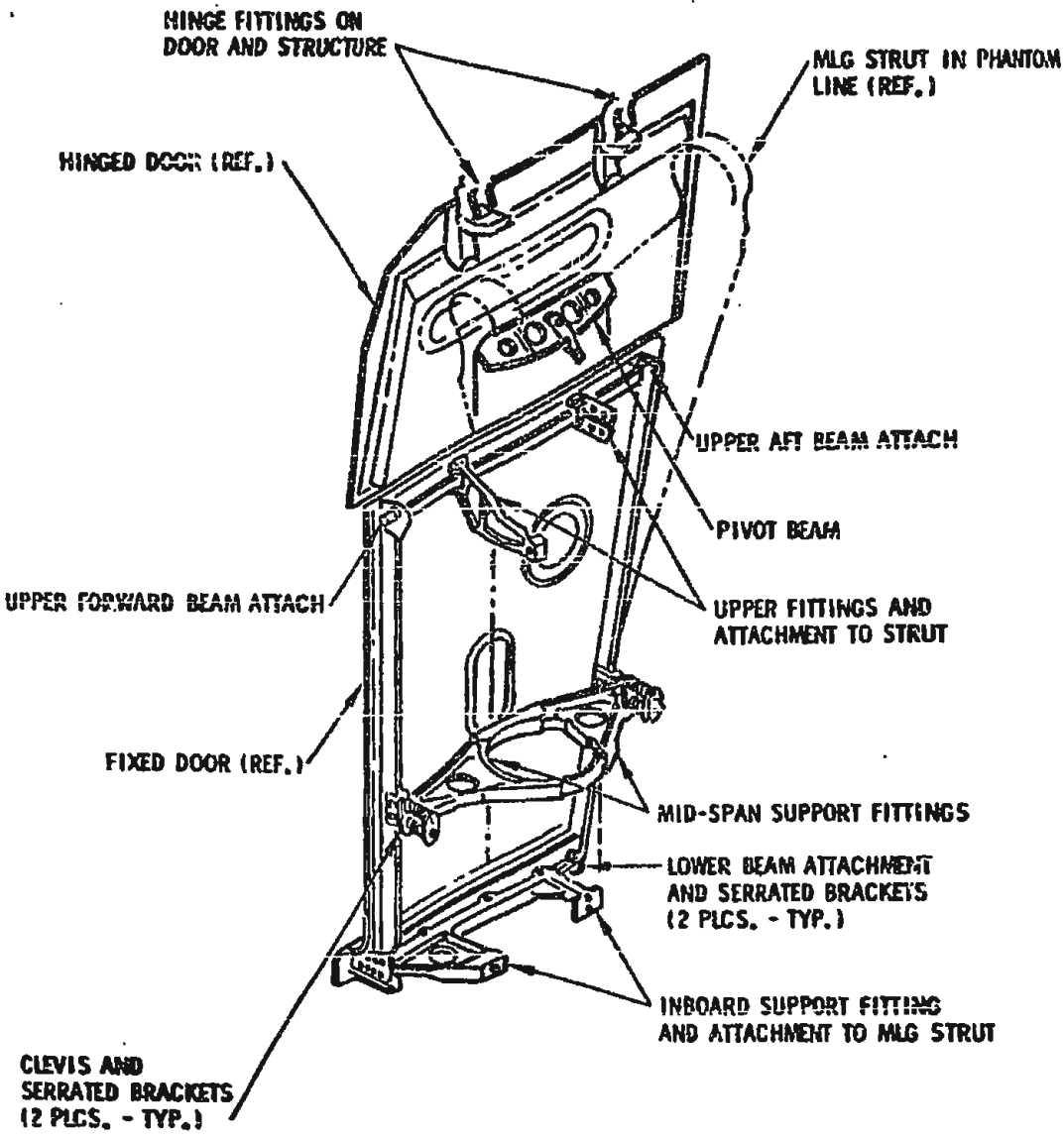
CR (2) Check around bolts installed thru fittings.

CR (3) On the fixed door, check primary structure for cracks around fittings and clevises (Figure 501).

CR (4) Check inner and outer skins for cracks, separations, and/or failed fasteners, particularily around fittings and along edges.

CR (5) On the hinged door, inspect hinges and pivot beam, and adjacent areas of door structure.

CR C. Defective parts must be replaced and other discrepancies corrected prior to further flight, unless affected door(s) are removed for operation as specified in minimum equipment and CDL.


HINGE FITTINGS ON DOOR AND STRUCTURE
MLG STRUT IN PHANTOM LINE (REF.)
HINGED DOOR (REF.)
UPPER AFT BEAM ATTACH
PIVOT BEAM
UPPER FORWARD BEAM ATTACH
UPPER FITTINGS AND ATTACHMENT TO STRUT
FIXED DOOR (REF.)
MID-SPAN SUPPORT FITTINGS
LOWER BEAM ATTACHMENT AND SERRATED BRACKETS (2 PLCS. - TYP.)
INBOARD SUPPORT FITTING AND ATTACHMENT TO MLG STRUT
CLEVIS AND SERRATED BRACKETS (2 PLCS. - TYP.)

M1-0000-52-46

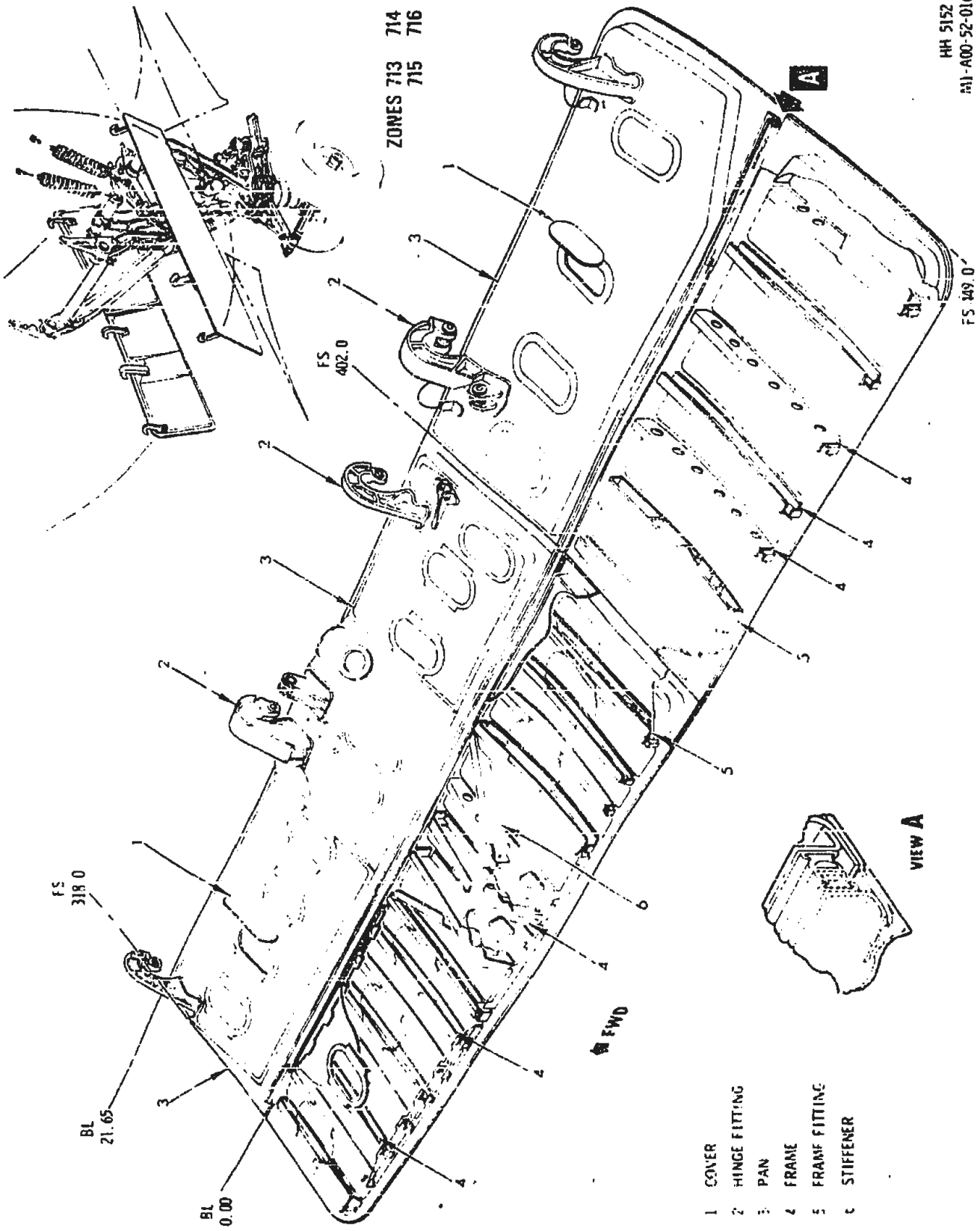
CR Main Landing Gear (MLG) Door Check Following Gear Down Flight
CR Figure 501 Right-Hand Shown
CR (Left-Hand Typical)

R EFFECTIVITY: ALL
R
001B

NOSE LANDING GEAR DOORS - DESCRIPTION AND OPERATION

1. General

The nose landing gear doors (Ref. Fig. 1) consist of four separate panels: two forward and two aft. The doors are of conventional construction using aluminum alloys.



Nose Landing Gear Doors
Figure 1

TRANS WORLD AIRLINES, INC.

PUBLICATIONS CHANGE REQUEST (PCR)

SEND COMPLETED FORM TO
TECH INFO SUPPORT,
1–361, MCI

(TECH. INFO. SUPPORT USE ONLY)
PCR NBR:

FOR TWA TECH. INFO. SUPPORT USE ONLY:		FOR SENDER USE ONLY:	
PREPARED BY	DATE	ORIGINATOR	
TO:		JOB TITLE	
MFR		ADDRESS (CC/COL)	STATION
TWA ENGRG			
OTHER		PHONE ( )	DATE

MANUAL:				
MANUAL TITLE		A/C TYPE	SERIES	
MFR NAME		TWA STK NBR	MFR P/N	
NOMENCLATURE				
ATA NO.	PAGE(S)/SHEET	PAGE DATE	FIGURE	CHG LTR

CONFLICTS WITH:		
DOCUMENT:	CHAP/SECTION	PAGE/SHEET/DATE

DISCREPANCY REMARKS:

If possible, attach marked–up copy of affected page(s) along with a brief description of the recommended change(s); otherwise describe problem in detail. Print (dark and clear). Attach additional pages as required.

PRODUCTION SUPERVISOR (Signature required for CMM Discrepancies)

ACTION:		COMPONENT MAINTENANCE MANUAL (CMM) REVISION ADVISORY:	
	TWA Technical Info. Support	APPROVED ☐ DISAPPROVED ☐	
	Manufacturer	ENGINEER	DATE
	Engineering Review Required	MANAGER	DATE

THIS CHANGE WAS ☐ WILL BE ☐ CORRECTED/ADDED ☐ IN REVISION DATED

COMMENTS:

MFR. REP. REPLY	DATE
TIS SPECIALIST REPLY	DATE

FORM TIS–436–F (2/93)